# A Quick Introduction to Health, Safety, and Environmental Assurance

his section includes skill standards for the manufacturing concentration of Health, Safety, and Environmental Assurance. These skill standards were developed by the Manufacturing Skill Standards Council (MSSC), under the auspices of the National Skill Standards Board (NSSB).

For a detailed explanation of each aspect of the standards, see *A Quick Orientation*, one of the guidebooks included with your binder.

### Skill Standards: A Brief Explanation

The MSSC developed skill standards for six concentrations – major areas of frontline manufacturing work covering families of related jobs. The standards in this document cover the Health, Safety, and Environmental Assurance concentration. The Health, Safety, and Environmental Assurance concentration is defined as follows:

HEALTH, SAFETY, AND ENVIRONMENTAL ASSURANCE			
DEFINITION	SAMPLE JOBS COVERED		
Ensure that the manufacturing system meets health, safety, and environmental requirements.	Health and safety representative, safe- ty coordinator, and safety team leader		

The skill standards are made up of two major components. They are:

**Information** *About the Work.* This component describes what workers need to be able to do on the job to perform competently. It includes:

- Critical Work Functions The major responsibilities of work within a concentration.
- Key Activities The major duties or tasks involved in carrying out a critical work function.
- Performance Indicators Indicators of how to determine when someone is performing each key activity competently.

**Information** *About the Worker.* This aspect of the skill standards describes the knowledge and skills an individual needs to perform the work described by each critical work function, along with its key activities and performance indicators. There are three types of knowledge and skills:

- Academic Knowledge and Skills –
   Academic skills such as mathematics, reading, etc.
- Employability Knowledge and Skills –
  Broadly applicable skills such as working in teams, analyzing and solving problems, etc.
- Occupational and Technical Knowledge and Skills – Occupational and technical skills that tend to be specific to an industry or concentration, such as skill in using inspection tools and equipment, knowledge of manufacturing processes, etc.

For the academic and employability knowledge and skills, the MSSC skill standards provide:

Complexity Ratings: These ratings tells us, for a given critical work function, the level of complexity required in a particular academic or employability knowledge and skill. For example, if writing is required in order to perform a given critical work function, the complexity rating would tell us whether someone needs to write telephone messages versus technical manuals. These ratings were developed using the NSSB Academic and Employability Skill Scales. For more information on the scales and complexity ratings, see *A Quick Orientation* and the *Skill Scales Companion Guide*. There are two types of complexity ratings in the skill standards:

**Overall Complexity Rating:** As the name implies, the overall complexity rating gives us a rough estimate of the overall level of complexity required for a given knowledge and skill. These ratings are provided for frontline workers (represented by the symbol "W") and first-line supervisors (represented by the symbol "S"). The scale is:

L = Low; M = Moderate; and H = High

In some cases, the overall complexity rating was **NA** (**Non-Applicable**). This means that this skill was deemed not to be needed to perform this given critical work function, so no complexity rating was assigned.

**Subdimension Complexity Rating** To give users more detailed information, the

MSSC skill standards also provide an individual rating for each subdimension in the NSSB Academic and Employability Skill Scale (See the *Skill Scales Companion Guide*). These ratings apply to frontline workers only. Ratings have not been developed for first-line supervisors at this time. The scale is: **L** = **Low**; **M** = **Moderate**; **and H** = **High** 

In some cases, the subdimension complexity rating was **NA** (**Non-Applicable**). This means that this *particular dimension* of the skill was deemed not to be needed to perform this given critical work function, so no complexity rating was assigned.

### Occupational and Technical Knowledge and Skills

Occupational and technical knowledge and skills are unique to a given industry sector or concentration. In manufacturing, they include knowledge and skills in areas such as inspection tools and equipment, production tools and equipment, and manufacturing processes.

The MSSC standards describe the occupational and technical knowledge and skills needed to perform each critical work function. The occupational and technical knowledge and skills are grouped into categories, with specific examples under each category. Please note that the MSSC did not develop complexity ratings for the occupational and technical knowledge and skills. This may be a part of future research.

### **Tips for Getting Started**

Here are step-by-step instructions to help you get started:

- 1. Find a critical work function that interests you. Read each of its key activities, along with its associated performance indicators. You will find this information in the "About the Work" section on the left-hand page.
- 2. Open the fold-out pages and examine the "About the Worker" sections that focus on the academic and employability knowledge and skills.
- 3. Start by looking at the first academic knowledge and skill, which is always math, and find out the overall complexity rating

- by looking across the table to the right. To understand what this rating means, see the *Skill Scales Companion Guide*.
- 4. To find out the subdimension ratings for math, look further across the standards, using the *Skill Scales Companion Guide* to understand what each rating means. Repeat process for rest of academic and employability knowledge and skills.
- 5. Now, look at the occupational and technical knowledge and skills needed for this critical work function. These are located on the back page of the two-page fold-out section.

## Critical Work Function: Train workers in health, safety and/or environmental issues.

#### Critical work functions

describe the major responsibilities involved in carrying out a concentration

**Concentrations** 

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concentration.

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related jobs.

are the major areas of front-

### **Key Activities Key activities** are

the duties and tasks involved in carrying out a critical work function

#### **Performance Indicators**

Performance indicators correlate to the key activities. The performance indicators provide information on how to determine when someone is performing each key activity competently

Determine priorities for health, safety and/or environmental training needs

Analysis of health, safety and/or environmental tasks is conducted at the job level. Health, safety and/or environmental records are analyzed to identify training needs.

Results of training assessments are documented. Training plans with clear objectives are developed based on analysis.

Worker input regarding training needs is solicited.

Prepare health, safety and/or environmental training materials

Training content meets industry, government and company standards. Training materials have the correct content to meet the training needs.

Training materials are updated continuously.

Training materials are clear, worker-friendly, and appropriate for the audience.

Training materials are available and accessible to all relevant parties.

Conduct health, safety and/or environmental training for employees

Employee records document that training has been delivered.

Training schedules are developed.

Evaluations indicate worker understanding of the training materials.

Appropriate workers receive training.

Test results and certifications achieved indicate effective training.

Document required health, safety and/ or environmental training

Training attendance records are on file.

A training profile for each job is developed and maintained.

Test results and certifications are maintained.

Documentation is available to appropriate parties.

Feedback from trainees is requested and documented.

Confidentiality of the outcomes of health, safety and /or environmental assurance training is maintained.

Plan future health, safety and/or environmental training.

Training plans include appropriate content.

Training is designed for the specific needs of individuals.

Appropriate workers are asked for input into content of training.

Training plan includes effective evaluation and follow-up process.

Worker feedback is included in future training.

Describes what a worker needs to know or be able to do to perform the critical work function

### ACADEMIC AND EMPLOYABILITY SKILLS

Skill	Overoll de ital	or Corpority	Complexity Dimension	Complexity Subdimension	Carried Carried
Math L	L	L	Complexity of mathematics content	Number sense and computation Geometry, measurement, and spatial sense Complexity of data analysis, statistics, and probability Functions and algebraic thinking Complexity of representation and communication	L NA L NA L
			Complexity of problem solving	Mathematical methods Mathematical reasoning Mathematical tools	L L L
Science	L	L	Complexity of scientific inquiry	Design Use of evidence	L L
			Complexity of understanding the nature of science	Unifying concepts and processes	L
			Complexity of core scientific content	Physical science Life science Earth and space science	L L NA
			Complexity of applied science	Science and technology Science in personal and social perspective	NA L
Reading	М	Н	Complexity of text Complexity of reading skills Complexity of reading purpose		M M M
Writing	М	М	Complexity of text	Complexity of text	М
			Complexity of writing product	Type of product Organization Elaboration	M M M
			Complexity of writing process	Writing development To inform To persuade	M M M
Listening	М	М	Complexity of communication	Content complexity Demands on attention Communication indirectness	M M M
			Barriers to communication	Limitations on interaction Distractions	M M
Speaking	М	н	Complexity of communication	Content complexity Tact and sensitivity required Communication indirectness	M M M
			Context demands	Diversity of audience Constraints on preparation Distractions Listener resistance	M M M
Using Information and Com-	L	L	Complexity of technology application	Complexity of equipment or technology Complexity of applications Training time constraints	L M L
munications Technology			Frequency of technology change	New learning required	L L L L L L NA NA NA L NA
Gathering and Analyzing	М	М	Difficulty of information gathering	Amount of information Number and variety of sources Resourcefulness needed	М
Information			Complexity of analysis	Complexity of information and analysis Need to evaluate source information Lack of analysis guidelines	М

#### ACADEMIC AND EMPLOYABILITY SKILLS

Skill	Overall defict	ode constitution	Complexity Dimension	Complexity Subdimension	constitution of the consti
Analyzing and Solving	L	L	Problem complexity	Problem uniqueness or difficulty Number and range of problems	M M
Problems			Solution complexity	Number and complexity of possible solutions	М
Making Decisions and	М	М	Degree of judgment or inference required	Lack of guidance or precedents Integration difficulty Quantity or ambiguity of risks and consequences	M M M
Judgments			Individual decision-making responsibility	Accountability and autonomy Absence or ambiguity of rules or policy constraints	M L
Organizing and Planning	М	М	Complexity of plans	Goal complexity or ambiguity Flexibility required Resource coordination required Scope and effects of planning	M M M
			Constraints on planning	Lack of guidelines Lack of feedback Constraints on resource availability	L M M
Using Social Skills	М	М	Complexity of social interactions	Diversity Structure or protocol required Tact and sensitivity required	M M M
Adaptability	М	L	Degree of adaptability required  Difficulty of adapting	Frequency of change Unpredictability of change Lack of support for change	M M M
Working in Teams	М	М	Degree of collaboration required  Team member heterogeneity  Goal or role ambiguity	Task interdependence  Team diversity  Lack of clarity or support for team goals Lack of clarity or stability of responsibilities	M M L M
Leading Others	L	М	Work challenges  People challenges	Challenges to goal attainment Work structuring requirements Scope and complexity of leadership responsibility  Coaching or monitoring needs Conflict management needs	M M NA M
Building Consensus	М	М	Consensus process inhibitors	Number and diversity of stakeholders Ambiguity of goals Lack of organizational support, incentives, or consensus leadership High consensus standard	M M M
			Difficulty of issues requiring consensus	Complexity of issues Contentiousness of issues Lack of opportunities for agreement	M M M
Self and Career Develop-	NA	М	Need for learning and development  Limitations on learning and development	Self and career development requirements  Time, resource, or support constraints	NA NA
ment			opportunities	Application constraints	NA

Overall complexity ratings: The overall level of complexity required in a skill in order to perform the critical work function. Scale: H=high complexity: M=moderate complexity; and L=low complexity. Two separate ratings are provided: one for workers (entry-level up to first-line supervisors) and the other for supervisors (first-line supervisors). In some cases, the overall complexity rating was NA (Non-Applicable). This means that this skill was deemed not to be needed to perform this given critical work function, so no complexity rating was assigned.

Complexity Subdimension ratings: These are complexity level ratings for individual aspects of the particular skill. Scale: H=high complexity: M=moderate complexity; and L=low complexity. At this time, these ratings are provided for workers only. In some cases, the subdimension complexity rating was NA (Non-Applicable). This means that this particular dimension of the skill was deemed not to be needed to perform this given critical work function, so no complexity rating was assigned.

Describes what a worker needs to know or be able to do to perform the critical work function

#### OCCUPATIONAL AND TECHNICAL KNOWLEDGE AND SKILLS

These are the technical knowledge and skills needed to perform the critical work function.

Skill Category	Specific Knowledge and Skills	Specific Knowledge and Skills
Business Policies and Procedures	A. Knowledge of how to define safety requirements for use in job descriptions.     B. Knowledge of relevant company confidentiality policies and procedures (i.e., confidentiality, security, proprietary, policy, procedures and ethics).	C. Knowledge of current business direction in order to plan for training.     D. Skill in integrating safety, health and environmental training into work processes and schedules.
Training Needs Assessment	A. Skill in information gathering using surveys, OSHA logs, workers comp reports, department incident statistics, job analysis and skill analysis, near miss and hazard reports, safety work orders and observations to determine training needs.      B. Skill in job hazard analysis in order to determine training needs.      C. Knowledge of the skill level of employees in order to develop suitable training materials      D. Knowledge of training and certification required by government regulations, suppliers, customers, contracts and industry standards.	E. Knowledge of the costs of health, safety and environmental incidents and the value of training.  F. Knowledge of training required by ISO 9000 and government standards.  G. Skill in interpreting government regulations to identify training needs correctly.  H. Knowledge of standard operating procedures for specific equipment or operations.
Training Delivery	A. Knowledge of manufacturing processes, hazardous materials, and environmental impacts to determine training objectives, content and target populations.     B. Knowledge of workplace and process terminology to effectively communicate with the audience.     C. Skill in preparing training materials using appropriate technologies and instructional methods for presentation to diverse groups.     D. Knowledge of qualified training vendors and materials based on technology, price, and quality.	E. Skill in developing a feedback system to respond to employee questions and comments about health, safety, and environmental issues to develop appropriate training.     F. Skill in developing resources easily accessible to workers and management G. Knowledge of methods for updating training, as equipment, people and processes change.     H. Knowledge of adult learning principles.
Training Evaluation	A. Skill in evaluating training to ensure the quality of the training program.     B. Knowledge of evaluation techniques used to assess training effectiveness     C. Knowledge of how to develop and use participant feedback to determine if the training was useful and understood.	D. Skill in evaluating training effectiveness by analysis of post training incidents for frequency and severity.     E. Skill in the use of methods to evaluate instructors and training materials.
Health, Safety, and Environ- mental Rules and Regula- tions	A. Knowledge of certification requirements for particular jobs.     B. Knowledge of company-specific health, safety, and environmental standards.     C. Knowledge of the principal of the hierarchy of controls for HS&E hazards.     D. Skill in reviewing industry, government, and company standards to incorporate new information and regulations into training materials.	E. Knowledge of Job Hazard Analyses to assess the effectiveness and need for existing rules and regulations.     F. Knowledge of regulatory requirements regarding training records.     G. Knowledge of how to fill out appropriate environmental reports.
Safety Documen- tation	A. Knowledge of how to develop and maintain a training profile that documents who was trained in what areas and who is still in need of training.     B. Knowledge of which personnel should have their training documented.	C. Knowledge of what training documentation forms are required, where to find them and how to complete them (e.g., attendance forms).

	Critical Work Fu	nction: Train workers in health, safety and/or environmental issues
Knowledge/skill	Mean Importance	Examples
Using Information and	<u> </u>	4.06 Search internet websites (e.g., OSHA) to determine training requirements for a particular operation
Communication Technology		Research available training materials using Internet
	<del>_</del>	Use presentation software to present information on health and safety issues to students
	<del>_</del>	Use database software to track students' training progress
	<del>_</del>	Use various tools to develop training materials (e.g., objectives wizards, graphic programs, computer-based training
		software)
	<del>_</del>	Develop handouts and overheads (or PowerPoint presentation)
		Evaluate training deficiencies from computerized recordkeeping systems/reports
Gathering and Analyzing		
Information		3.74 Gather current data on health, safety, and/or environmental issues in order to develop training.
	<del>_</del>	Gather information from workers.
	_	Gather information from accident reports in order to provide prevention training
	_	Keep updated on changing trends of the industry from outside sources
	<del>-</del>	Prepare credible examples to enhance learning and skills ability
		Use small group discussion to talk about and develop solutions for health, safety, and/or environmental problems
	_	Do needs analysis for training in a particular health, safety, and/or environmental topic (e.g. lockout/tagout)
	<del>_</del>	
Analyzing and Solving Problems	<u> </u>	3.69 Perform job safety analysis of work areas to identify causes of injuries
	=	Develop training solutions to eliminate potential health and safety problems
	<u> </u>	Train workers on how to become more accustomed to look for possible safety infractions
	<u> </u>	Train employees on use of safety equipment
		Choose appropriate training materials
Making Decisions and Judgments		3.80 Develop training based on existing policies
	<del>_</del>	Identify trends in how decision and judgments were made based on job history and accident reports
	<del>_</del>	Review training evaluations and adjust length of program if needed
	<del>_</del>	Decide whether to do personal protective equipment or hazmat training first for new employee
	_	Determine training requirements and priority of topics
	_	Review facts and information to provide timely and relevant health and safety training
	<del>_</del>	Identify hazards in the workplace which affect employee safety
Organizing and Planning	<u> </u>	3.77 Organize handouts, outlines, overheads to match training objectives
	<u>_</u>	Document completion of training for training records
		Plan production schedules to allow all shift personnel to participate in safety training
	<del>-</del>	Determine how many training sessions will be required and schedule rooms, trainers, equipment, etc.
	<del>-</del>	Organize training materials and set priorities for training

	Develop a comprehensive plan to deliver training to employees
	Adjust training in class to assist those in need of help or identify those individuals in class who can help others.
Using Social Skills	3.90 Adjust teaching style and method based on learning styles and cultural background
	Use social skills to provide effective training
	Communicate in a pleasant manner in order to keep workers engaged.
	The ability to gauge your audience in order to tailor training style to meet their needs.
	Engage the students in classroom training through fun, challenging and thought-provoking means
	Receive honest, open feedback from employees on training
	Solicit input from trainees on what training methods they think work best
Adaptability	3.74 Tailor training to fit varying audiences
	Revise training materials to reflect new regulations
	Training must constantly change in order to meet the needs of the trainees and changes in the workplace (repetitive
	of previous)
	Change teaching style to accommodate "class personality" (SAME AS # 1)
	Stay abreast of new training methods and technology
Working in Teams	3.84 Develop and deliver health, safety, and/or environmental training using a team-based approach
	Team with other trainers during a training session
	Work with cross functional team to develop new training program
	Develop training that breaks class into small groups to explore different issues.
	The planning process is enhanced by working in small groups or teams
	Work with others in setting a training curriculum to obtain input from different views
Leading Others	4.00 Lead by example and in so doing provide others with training in health, safety and environmental issues
	Facilitate meetings and encourage everyone's input
	Inspire students to continue learning about topic outside the classroom (e.g., to read the MSDS)
	Inspire workers to be their own defense against injury
	Train others, by example, to carry out health, safety, and environmental assignments without constant supervision
Building Consensus	3.30 Build consensus by seeking input and feedback from workers
	Train in a way that builds consensus in order to ensure students buy into training.
	Get everyone to agree as part of a training session
	Obtain worker feedback for new technology or procedures; build consensus with project management
Self and Career Development	1.75 Keep abreast of new developments in the field
	Integrate cutting-edge knowledge in teaching
	Gain new knowledge and make it a part of training
	Obtain a training specialist certification to improve development and/or delivery skills
	Keep certifications updated and ensure certifications of employees are documented

	Stay abreast of newly developed technology, such as new lighting and equipment
Speaking	4.06 Be able to express information appropriately to varied audiences  Know how to express yourself clearly in training  Prepare an oral report of the safety status of a particular department, and speak to the crew  Convey to workforce what safety measures must be implemented to successfully carry out job assignment  Be able to make comprehensive verbal presentations on safety and environmental programs.
Listening	4.09 Listen to problems and solutions from employees  Hear the concerns of employees not understanding the training material  Solicit meaningful feedback about training program and its effectiveness  Solicit and record verbal worker feedback  Listen to concerns of workers regarding work conditions (e.g., lighting, air quality, temperature and exposures, contaminants)
Writing	4.16 Prepare training manual for new piece of equipment Write training materials to the skill level of your audience Create detailed written work procedures for a new workstation spelling Write out a training plan with distinct objectives Record health and safety notes to be discussed at a training meeting
Reading	4.29 Review existing training materials  Read current trade publications  Review written documentation describing the hazards of certain equipment operations  Read and understand written employee feedback at conclusion of training courses  Develop handouts on safety for distribution to employees  Read job procedures to verify that instructions are followed
Math	2.72 Use statistics to analyze accident trends in order to determine training needs  Compute average rating for employee feedback  Use math for basic statistical analysis and record keeping  Explain OSHA noise exposure limits to employees (time-weighted average)  Use industrial hygiene tables to calculate work to rest ratios for heat exposure; document time to exposure
Science	3.58 Explain health risks of chemicals and solvents  Develop training materials that describe why a material is hazardous  Use standard physics and ergonomics to determine risks and hazards at job sites  Explain to employees health hazards from exposure to materials used in making products  Train workers in the proper way to use equipment (ergonomics)  Explain tolerance levels to chemical and particle exposure as part of training

#### HSE<sub>2</sub>

#### Critical Work Function: Conduct health, safety and/or environmental incident and hazard investigations. **Critical work functions**

describe the major responsibilities involved in carrying out a concentration

### **Key Activities**

#### **Key activities** are the duties and tasks involved in carrying out a critical work function

#### Performance Indicators

Performance indicators correlate to the key activities. The performance indicators provide information on how to determine when someone is performing each key activity competently

#### Investigate health, safety and/or environmental incidents

Established investigation procedures are followed.

Contributing factors for the incident are identified through root cause analysis. All relevant parties are interviewed in an impartial and tactful manner.

Investigation findings are reported in a timely manner. Relevant experts are included in the incident investigation.

#### Investigate health, safety and/or environmental hazards

Potential safety hazards are promptly and properly identified.

Hazard is corrected.

Hazard is reported to correct parties for immediate attention.

Documentation, where appropriate, is completed and forwarded to correct parties.

#### Document findings of health, safety and/ or environmental investigations

Documentation is accurately completed.

Documentation is submitted in a timely manner. Documentation is communicated to correct parties.

Documentation includes conclusions and recommended corrective action.

Documentation meets all applicable laws and regulations.

Documentation includes all necessary signatures.

#### Suggest corrective actions

Suggestions are based on solid data and root cause analysis.

Suggested actions are documented appropriately.

Suggested actions are communicated to appropriate parties in a timely manner.

Suggestion actions are based on findings of the investigations.

#### Check that appropriate action has been taken to correct health, safety and/ or environmental problems

Safe operating procedures are updated when appropriate.

Safety work orders are completed.

Worker training is delivered, if required.

Incident rates are analyzed to determine if corrective action was effective.

Follow-up investigation is completed to ensure corrective action is taken and root cause is addressed.

## are the major areas of front-

Concentrations

line work covering families of related jobs. Separate standards were identified for each concentration.

**About the Work** 

Describes what a worker needs to know or be able to do to perform the critical work function

### ACADEMIC AND EMPLOYABILITY SKILLS

Skill	One Courts the	st. Overoll death	Complexity Dimension	Complexity Subdimension	Caraga de Mon
	NA	NA L	Complexity of mathematics content	Number sense and computation Geometry, measurement, and spatial sense Complexity of data analysis, statistics, and probability Functions and algebraic thinking Complexity of representation and communication	NA NA NA NA
			Complexity of problem solving	Mathematical methods Mathematical reasoning Mathematical tools	NA NA NA
Science	М	М	Complexity of scientific inquiry	Design Use of evidence	M
			Complexity of understanding the nature of science	Unifying concepts and processes	м
			Complexity of core scientific content	Physical science Life science Earth and space science	M L L
			Complexity of applied science	Science and technology Science in personal and social perspective	M M
Reading	М	М	Complexity of text		М
-			Complexity of reading skills Complexity of reading purpose		M
Writing M	M	M	Complexity of reading purpose  Complexity of text	Complexity of text	M
			1 /	· ,	
			Complexity of writing product	Type of product Organization	M M
				Elaboration	М
			Complexity of writing process	Writing development	М
				To inform	M
				To persuade	М
Listening	M	н	Complexity of communication	Content complexity Demands on attention	M
				Communication indirectness	M
			Barriers to communication	Limitations on interaction	
			barriers to communication	Limitations on interaction Distractions	M H
Speaking	М	н	Complexity of communication	Content complexity	М
Speaking	.,,	••	Complexity of communication	Tact and sensitivity required	M
				Communication indirectness	М
			Context demands	Diversity of audience	М
				Constraints on preparation	M
				Distractions Listener resistance	M M
Heine	М	М	Complexity of technology application	Complexity of equipment or technology	14
Using Information	IVI	IVI	Complexity of technology application	Complexity of equipment of technology  Complexity of applications	M M
and Com-				Training time constraints	М
munications Technology			Frequency of technology change	New learning required	М
Gathering	М	н	Difficulty of information gathering	Amount of information	М
and				Number and variety of sources	M
Analyzing Information				Resourcefulness needed	М
IIIIOTIIIATION			Complexity of analysis	Complexity of information and analysis	М
			Complexity of analysis	Need to evaluate source information	M

#### ACADEMIC AND EMPLOYABILITY SKILLS

Skill	Overall destry	odes Outoffice state	complexity Dimension	Complexity Subdimension	Charles for the Control of the Contr
Analyzing and Solving	Analyzing H	М	Problem complexity	Problem uniqueness or difficulty Number and range of problems	M H
Problems			Solution complexity	Number and complexity of possible solutions	М
Making Decisions and	М	М	Degree of judgment or inference required	Lack of guidance or precedents Integration difficulty Quantity or ambiguity of risks and consequences	M M M
Judgments			Individual decision-making responsibility	Accountability and autonomy Absence or ambiguity of rules or policy constraints	M L
Organizing and Planning	М	М	Complexity of plans	Goal complexity or ambiguity Flexibility required Resource coordination required Scope and effects of planning	м м м м
			Constraints on planning	Lack of guidelines Lack of feedback Constraints on resource availability	M M M
Using Social Skills	М	М	Complexity of social interactions	Diversity Structure or protocol required Tact and sensitivity required	M M M
Adaptability	М	М	Degree of adaptability required  Difficulty of adapting	Frequency of change Unpredictability of change Lack of support for change	M M M
Working in Teams	L	М	Degree of collaboration required  Team member heterogeneity  Goal or role ambiguity	Task interdependence  Team diversity  Lack of clarity or support for team goals	M M L
Leading Others	М	M	Work challenges  People challenges	Lack of clarity or stability of responsibilities  Challenges to goal attainment Work structuring requirements Scope and complexity of leadership responsibility  Coaching or monitoring needs	M M M
Building Consensus	L	М	Consensus process inhibitors	Conflict management needs  Number and diversity of stakeholders  Ambiguity of goals  Lack of organizational support, incentives, or consensus leadership  High consensus standard	M M L
			Difficulty of issues requiring consensus	Complexity of issues Contentiousness of issues Lack of opportunities for agreement	M M M
Self and Career Develop-	NA	М	Need for learning and development  Limitations on learning and development	Self and career development requirements  Time, resource, or support constraints	NA NA
ment			opportunities	Application constraints	NA

Overall complexity ratings: The *overall* level of complexity required in a skill in order to perform the critical work function. *Scale*: H=high complexity: M=moderate complexity; and L=low complexity. Two separate ratings are provided: one for *workers* (entry-level up to first-line supervisors) and the other for supervisors (first-line supervisors). In some cases, the overall complexity rating was NA (Non-Applicable). This means that this skill was deemed not to be needed to perform this given critical work function, so no complexity rating was assigned.

Complexity Subdimension ratings: These are complexity level ratings for individual aspects of the particular skill. *Scale*: H=high complexity: M=moderate complexity; and L=low complexity. At this time, these ratings are provided for workers only. In some cases, the subdimension complexity rating was NA (Non-Applicable). This means that this *particular dimension* of the skill was deemed not to be needed to perform this given critical work function, so no complexity rating was assigned.

Describes what a worker needs to know or be able to do to perform the critical work function

#### OCCUPATIONAL AND TECHNICAL KNOWLEDGE AND SKILLS

These are the technical knowledge and skills needed to perform the critical work function.

Skill Category	Specific Knowledge and Skills	Specific Knowledge and Skills
Safety Principles, Tools and Equipment	A. Knowledge of how control measures and Personal Protective Equipment (PPE) should be used for areas to be investigated.     B. Knowledge of when a machine or a process should be stopped to investigate or correct a hazard.     C. Skill in using appropriate monitoring and test equipment (i.e., gas monitors, pumps, sound level meters, etc)	D. Skill in using and evaluating information tools such as MSDS and other relevant process safety information.      E. Skill in using audio visual equipment to record hazards, investigations, interviews as necessary.
Health, Safety, and Environ- mental Rules and Regula- tions	A. Knowledge of applicable laws and regulations regarding safety and health and the environment (e.g., Occupational Safety and Health Administration (OSHA)).      B. Knowledge of federal, state and company rules and regulations concerning incident investigations.      C. Knowledge of blood-borne pathogens and fluid containment procedures.	D. Knowledge of who to contact and what actions are required when there is a spill or release.  E. Knowledge of National Institute of Occupational Safety and Health (NIOSH), ACGIH recommendations, guidelines and other best practices.  F. Knowledge of regulatory agency fines and requirement for corrective actions.
Documen- tation Require- ments	A. Knowledge of incident reporting procedures.     B. Knowledge of the steps to take when documenting a reported hazard or correction action.     C. Knowledge of near-miss report procedures.     D. Knowledge of Occupational Safety and Health Administration (OSHA) or other required reportable and non-reportable incident criteria.     E. Knowledge of relevant and applicable documentation standards.	F. Skill in updating job hazard analysis to reflect incident lessons.     G Knowledge of prior safety reports and their conclusions and recommendations for corrective actions.     H. Skill in collecting and maintaining a record of investigations.     I. Knowledge of the need to obtain and maintain complete investigation report.
Investiga- tion Procedures	A. Skill in determining who should be interviewed for incident investigation.     B. Knowledge of interviewing techniques (i.e., what types of questions to ask, how to ask questions when dealing with sensitive issues.)     C. Skill in properly and effectively interviewing all relevant parties when conducting an accident investigation.  D. Knowledge of OSHA, other government agencies, and workers or union rights, and roles and authority in an investigation.	E. Knowledge of Job Safety Analyses (JSAs) to determine how to investigate an incident.  F. Knowledge of investigation procedures for examining worker safety, healt and environmental hazards.  G. Knowledge in how to use relevant experts for investigations related to a specific job, machine or process.  H. Knowledge of appropriate personnel who must be present during an investigation.
Investiga- tion Analysis and Follow up	A. Skill in data collection techniques to enhance root cause analysis.     B. Skill in determining effectiveness of corrective action rates to analyze if corrective action was effective.     C. Skill in applying the hierarch of controls to determine appropriate corrective actions.  D. Skill in using site surveys to identify hazards and to document locations of those hazards.  E. Skill in communicating findings, recommendations, necessary changes, and follow up procedures.	F. Skill in tracking and analyzing injuries, illnesses, near misses and hazards to show patterns.  G. Knowledge of the techniques and tools for tracking corrective action plan status to ensure that corrective actions are completed in a timely manner.  H. Knowledge of key health, safety, and environmental measurement systems to judge the effectiveness of the corrective actions.  I. Knowledge of case studies or previous investigations in order to identify possible corrective actions and causes.
Business Policies and Procedures	A. Knowledge of how deviations from normal operating and maintenance procedures contribute to safety risks.      B. Knowledge of company policies and practices regarding safety reviews.      C. Knowledge of repair and maintenance mechanisms, in order to check that appropriate actions are taken.	D. Knowledge that the most current safety procedures are in use.     F. Knowledge of company policies and procedures for corrective actions.     G. Knowledge of company organizational structure to ensure appropriate parties are involved in health, safety and environmental hazard investigations and follow up.

Knowledge/skill	Mean Importance	onduct health, safety, and/or environmental incident and hazard investigations  Examples
THO WIE GUEST SKIII	imcan importance	3.66 Create computer investigation record that can be tracked by a database
		Use PC to record findings of investigations; Use PC to categorize types of hazards for use in prevention and
Jsing Information and		response efforts
Communication Technology		Draw a cause/effect diagram using a flowcharting or other graphic-generator tool
		Document inspection findings using word processor; notify key personnel via email, voice mail or fax
		Input findings and corrective actions into computer action tracking or database
		Use telecommunications equipment (telephone, fax, email, copier) to assist in investigations
Sathering and Analyzing	•	Gather information from Internet; review MSDS sheets; contact health provider; review information from similar
nformation	<u></u>	4.17 industry
		Gather facts to expose root cause during incident investigations (COMBINE W/ # 3?)
		Gather information from observations, empirical testing, eyewitness accounts (COMBINE W/ # 2?)
		Analyze info from incident and research for corrective action
		Identify contributing factors for the incident and root cause
		Identify chain of events leading to an incident
	<u> </u>	Analyze process and/or equipment during incident investigation  Identify factors during an accident investigation and develop corrective measures  Analyze various solutions available to suggest the best corrective actions
	<u>—</u>	
		Facilitate team defining corrective actions needed as the result of an investigation
laking Decisions and Judgments	<u>i    </u>	3.48 Determine a list of people who need to be interviewed. Determine who should receive a copy of the investigation
		Identify hazards
	<u> </u>	Suggest corrective actions based upon relevant facts and best professional judgment
	<u> </u>	After analyzing problems decide if immediate action is necessary  Decide if weight of evidence supports investigation conclusion
		Decide it weight of evidence supports investigation conclusion
rganizing and Planning	===:	3.42 Disseminate findings and recommendations in a timely fashion
	<del></del>	Plan the sequence of action for correcting or controlling a hazard
		i iaii iiio ooquoiioo oi aduuii idi ooiiootiiig oi ooiitioiiiig a iiazara
	<del>_</del> _	Identify areas that might require corrective action immediately
	  	Identify areas that might require corrective action immediately  Plan investigation of an environmental incident in order to gather the most reliable data
		Identify areas that might require corrective action immediately  Plan investigation of an environmental incident in order to gather the most reliable data  Use checklist and standard forms to ensure all relevant materials are gathered
		Identify areas that might require corrective action immediately  Plan investigation of an environmental incident in order to gather the most reliable data
Ising Social Skills		Identify areas that might require corrective action immediately  Plan investigation of an environmental incident in order to gather the most reliable data  Use checklist and standard forms to ensure all relevant materials are gathered

	Elicit information from involved persons without intimidation, accusations, etc.
	Interviewing relevant parties in a friendly, tactful manner to ensure open responses
	Show respect for all viewpoints that are offered in the course of an incident investigation
Adaptability	3.10 Be willing to adjust investigation as it proceeds
rauptubiity	When suggesting corrective actions one must be able to adapt to necessary changes
	Suggest alternatives that might produce a more thorough result
	Adapt to different situations and people to conduct investigations
	Adopt to a new format to create a more informative report
	Adapt processes known to be safer without losing effectiveness
Working in Teams	3.84 Work within a team to conduct investigations
	Bring in outside team members to look at an incident and help identify the root cause
	Work as a team to more quickly complete documentation of study results
	Collaborate with safety experts in determining cause and corrective action
	Coordinate team to investigate incident or hazards so that different views can be obtained
Leading Others	3.10 Demonstrate the need for new operating procedures to improve safety
	Take time to demonstrate the proper procedures necessary for a conclusive investigation
	Lead accident investigation team
	Influence management to adopt suggested corrective actions
	Must be thorough and fair with incident and hazardous inspection
Deithing Consenses	0.40 Death agreement or automore of harmonic investigations
Building Consensus	3.10 Reach agreement on outcomes of hazards investigations
	Get input from workers as to safety infractions
	Use team facilitation techniques to gain consensus on the cause of an incident (SAME AS NEXT?)  Reach consensus on the root cause of an incident (SAME AS PREVIOUS?)
	Persuade the investigation team to withhold making any judgments about fault until all employee interviews are
	completed
Self and Career Development	2.00 Gather state-of-the-art information regarding hazards
•	Keep up-to-date on current laws and safety issues
	foundation
	Learn new investigation techniques so that the investigatory approach can be tailored to the situation
Speaking	3.37 Extract information without leading respondent
	Lead group meetings on investigations
	Converse with an employee about a major spill, to obtain facts discerning the root cause
	Discuss incidents with experts
	Present inspecting reports at employee safety meetings
	Speak with participants in hazard investigation to determine events leading to incident (SAME AS #3?)

Listening	4.25	Listen to facts during investigations
	<del>-</del>	Safety concerns are promptly identified, discussed and corrected
		Listen to witnesses' description of events associated with incident (SAME AS # 1?)
	<del>-</del>	Interview all relevant parties during investigation (SAME AS # 1?)
	<del>-</del>	Listen to concern of workers regarding hazards and safety for their particular workstation
Writing	4.13	Document root causes of incidents
		Write detailed reports to disseminate to various departments
		Write accurate and succinct accident investigation reports describing why accidents occurred
		Document in detail safety incident (who, what, when, where, why), addressing the problem and what steps need to
		be applied to prevent future mishaps (SAME AS # 1?)
		Write investigation report (SAME AS # 2?)
		Give details in writing of hazardous incident, e.g.,., time of incident, location, persons involved, and corrective
		procedure (SAME AS # 4?)
Reading	<del>-</del>	Read documentation (SAME AS # 3 & 4?)
		Read and analyze the data carefully to draw conclusions
		Read and follow documented investigation procedures (SAME AS # 1?)
		Read documents that are relevant to an incident investigation such as depositions, charts, and procedures
		Read safety procedures to ascertain whether correct procedures were followed
Math	<del>-</del>	Calculate simple statistics of accident and injury rates
		Calculate lifting capacities of rigging
		Compare incident rates to see if action is appropriate
		Calculate loss of materials caused by release to the environment
		Calculate maximum tolerable exposure levels for workers in hazardous environment
	0.50	
Science	<del>-</del>	Determine if excessive exposure to a chemical substance caused a problem
		Knowledge of chemicals to help during investigative procedures
	-	Use physics and ergonomics to identify root cause of incidents and/or injuries
		Analyze injury incident to determine if equipment needs to be redesigned to prevent further physical injuries
		Use established investigative procedures

#### HSE<sub>3</sub>

#### Critical Work Function: Conduct preventive health, safety and/or environmental Critical work functions inspections.

describe the major responsibilities involved in carrying out a concentration

Concentrations

are the major areas of frontline work cover-

ing families of

Separate stan-

tified for each

concentration.

dards were iden-

related jobs.

## Performance Indicators

**Key activities** are the duties and tasks involved in carrying out a critical work function

**Key Activities** 

Performance indicators correlate to the key activities. The performance indicators provide information on how to determine when someone is performing each key activity competently

Check safety, health and environmental inspections

Audit records and documentation are complete and available.

Policy or program statement shows frequency, content of the audit and responsible party.

Audits are conducted according to established procedures.

Audit documentation is accurately completed.

Audit documentation is reported in appropriate forums and format.

Relevant experts are involved.

Audit is effective at identifying compliance and non-compliance issues.

Document inspection findings

Inspection reports are accurately completed.

Corrective action reports or logs exist. Documentation is submitted to correct parties according to schedule.

Documentation includes all relevant information.

Conduct area health, safety and environmental inspections

Area inspection documentation is complete and available.

Area inspections are conducted according to established procedures.

Area inspection documentation is reported in an appropriate forum and format.

Inspections are thorough, timely and cover all relevant aspects of health, safety and environmental concerns. Inspection includes visual inspections and information gathered directly from workers.

Relevant experts are included in performing the inspections.

Submit inspection and audit findings to correct parties

Record of transmittal of inspection and audit findings is complete, accurate and includes all necessary

Inspection and audit findings are on file.

Inspection and audit findings are posted appropriately so that they are accessible to all relevant parties.

Regularly check job safety analysis against actual experience

Verification is conducted according to schedule.

Verification is done based on data.

Compliance rate reports are on file.

Describes what a worker needs to know or be able to do to perform the critical work function

### ACADEMIC AND EMPLOYABILITY SKILLS

Skill	overall derical	otes Overall petit	Complexity Dimension	Complexity Subdimension	On state tion	
Math	NA	L	Complexity of mathematics content	Number sense and computation Geometry, measurement, and spatial sense Complexity of data analysis, statistics, and probability Functions and algebraic thinking Complexity of representation and communication	NA NA NA NA	
			Complexity of problem solving	Mathematical methods Mathematical reasoning Mathematical tools	NA NA NA	
Science L	L	L	Complexity of scientific inquiry	Design Use of evidence	L M	
			Complexity of understanding the nature of science	Unifying concepts and processes	М	
			Complexity of core scientific content	Physical science Life science Earth and space science	L L NA	
			Complexity of applied science	Science and technology Science in personal and social perspective	L M	
Reading	М	М	Complexity of text		М	
			Complexity of reading skills Complexity of reading purpose		M	
W-itin-	M	M		Complanity of tout		
Writing	M	IVI	Complexity of text	Complexity of text	M	
			Complexity of writing product	Type of product Organization	M M	
				Elaboration	M	
			Complexity of writing process	Writing development	м	
			. ,	To inform	M	
				To persuade	M	
Listening N	М	М	Complexity of communication	Content complexity Demands on attention	M M	
				Communication indirectness	L	
			Barriers to communication	Limitations on interaction	М	
			Surreis to communication	Distractions	M	
Speaking	NA	М	Complexity of communication	Content complexity	NA	
			' '	Tact and sensitivity required	NA	
				Communication indirectness	NA	
			Context demands	Diversity of audience	NA	
				Constraints on preparation Distractions	NA NA	
				Listener resistance	NA	
Using	L	L	Complexity of technology application	Complexity of equipment or technology	М	
Information			3, 11	Complexity of applications	L	
and Com- munications				Training time constraints	L	
Technology			Frequency of technology change	New learning required	M	
Gathering	М	м м	M M Difficulty of	Difficulty of information gathering	Amount of information	M
and Analyzing				Number and variety of sources Resourcefulness needed	M M	
Information						
			Complexity of analysis	Complexity of information and analysis  Need to evaluate source information	M M	
				Lack of analysis guidelines	L	

#### ACADEMIC AND EMPLOYABILITY SKILLS

Skill	Overoll deltel	otes Oversingeith	Sco <sup>t5</sup> Complexity Dimension	Complexity Subdimension	Charles for the P	
Analyzing and Solving		М	Problem complexity	Problem uniqueness or difficulty Number and range of problems	M M	
Problems			Solution complexity	Number and complexity of possible solutions	М	
Making Decisions and Judgments	М	М	Degree of judgment or inference required	Lack of guidance or precedents Integration difficulty Quantity or ambiguity of risks and consequences	M M M	
Judgments			Individual decision-making responsibility	Accountability and autonomy Absence or ambiguity of rules or policy constraints	M M	
Organizing and Planning	М	М	Complexity of plans	Goal complexity or ambiguity Flexibility required Resource coordination required Scope and effects of planning	L M M	
			Constraints on planning	Lack of guidelines Lack of feedback Constraints on resource availability	L M M	
Using Social Skills	М	М	Complexity of social interactions	Diversity Structure or protocol required Tact and sensitivity required	M M M	
Adaptability	L	L	Degree of adaptability required	Frequency of change	М	
			Difficulty of adapting	Unpredictability of change Lack of support for change	L L	
Working in Teams	L	М	Degree of collaboration required	Task interdependence	М	
			Team member heterogeneity	Team diversity	М	
			Goal or role ambiguity	Lack of clarity or support for team goals  Lack of clarity or stability of responsibilities	L L	
Leading Others	L	М	Work challenges	Challenges to goal attainment Work structuring requirements Scope and complexity of leadership responsibility	M M L	
			People challenges	Coaching or monitoring needs Conflict management needs	L M	
Building Consensus	NA	NA	L	Consensus process inhibitors	Number and diversity of stakeholders Ambiguity of goals Lack of organizational support, incentives, or consensus leadership High consensus standard	NA NA NA
			Difficulty of issues requiring consensus	Complexity of issues Contentiousness of issues Lack of opportunities for agreement	NA NA NA	
Self and	NA	м	Need for learning and development	Self and career development requirements	NA	
Career Develop- ment			Limitations on learning and development opportunities	Time, resource, or support constraints Application constraints	NA NA	

Overall complexity ratings: The *overall* level of complexity required in a skill in order to perform the critical work function. *Scale*: H=high complexity: M=moderate complexity; and L=low complexity. Two separate ratings are provided: one for *workers* (entry-level up to first-line supervisors) and the other for supervisors (first-line supervisors). In some cases, the overall complexity rating was NA (Non-Applicable). This means that this skill was deemed not to be needed to perform this given critical work function, so no complexity rating was assigned.

Complexity Subdimension ratings: These are complexity level ratings for individual aspects of the particular skill. *Scale*: H=high complexity: M=moderate complexity; and L=low complexity. At this time, these ratings are provided for workers only. In some cases, the subdimension complexity rating was NA (Non-Applicable). This means that this *particular dimension* of the skill was deemed not to be needed to perform this given critical work function, so no complexity rating was assigned.

Describes what a worker needs to know or be able to do to perform the critical work function

#### OCCUPATIONAL AND TECHNICAL KNOWLEDGE AND SKILLS

These are the technical knowledge and skills needed to perform the critical work function.

Tools and Equipment C.  Inspection A B.  C.  D  E.  G	A. Skill in using applicable technology to record findings. B. Skill in using appropriate inspection monitoring instruments. C. Knowledge of equipment safety standards and proper calibrations and logging procedures.  A. Knowledge of who to contact prior to and during the inspection. B. Knowledge of company audit protocols or procedures when conducting audits. C. Knowledge of specialists who can aid in inspections. D. Knowledge of where to locate inspection and audit findings to learn more about the location where the inspection is being conducted. E. Knowledge of how often and at what key points in the production process inspections should be conducted. F. Skill in analyzing work processes, illness, near misses and environmental	D. Knowledge of appropriate equipment for control, handling, and disposal of hazardous materials such as asbestos, carcinogens, heavy metals, liquids.  E. Skill in using emergency equipment, fire extinguishers, and other safety equipment required.  F. Knowledge of appropriate Personal Protective Equipment (PPE).  I. Knowledge of inspection report posting requirements for all relevant parties.  J. Knowledge of how to identify trends that might indicate systemic problems.  K. Knowledge of specific operating procedures for equipment and processes being inspected.
Inspection A B. C. D. E. F. G.	C. Knowledge of equipment safety standards and proper calibrations and logging procedures.  A. Knowledge of who to contact prior to and during the inspection.  B. Knowledge of company audit protocols or procedures when conducting audits.  C. Knowledge of specialists who can aid in inspections.  D. Knowledge of where to locate inspection and audit findings to learn more about the location where the inspection is being conducted.  E. Knowledge of how often and at what key points in the production process inspections should be conducted.	E. Skill in using emergency equipment, fire extinguishers, and other safety equipment required.  F. Knowledge of appropriate Personal Protective Equipment (PPE).  I. Knowledge of inspection report posting requirements for all relevant parties.  J. Knowledge of how to identify trends that might indicate systemic problems.  K. Knowledge of specific operating procedures for equipment and processes being inspected.
Procedures B. C. D. E. F.	B. Knowledge of company audit protocols or procedures when conducting audits. C. Knowledge of specialists who can aid in inspections. D. Knowledge of where to locate inspection and audit findings to learn more about the location where the inspection is being conducted. E. Knowledge of how often and at what key points in the production process inspections should be conducted.	Knowledge of inspection report posting requirements for all relevant parties.     Knowledge of how to identify trends that might indicate systemic problems.     K. Knowledge of specific operating procedures for equipment and processes being inspected.
D E. F.	C. Knowledge of specialists who can aid in inspections.  D. Knowledge of where to locate inspection and audit findings to learn more about the location where the inspection is being conducted.  E. Knowledge of how often and at what key points in the production process inspections should be conducted.	lems.  K. Knowledge of specific operating procedures for equipment and processes being inspected.
E. F.	more about the location where the inspection is being conducted.  E. Knowledge of how often and at what key points in the production process inspections should be conducted.	being inspected.
F.	process inspections should be conducted.	
G		L. Skill in how to execute and complete the inspection of a particular area.  M.Knowledge of how to integrate results from inspection and job safety
	releases to gather information to reduce injuries.	analysis when communicating with employees.  N. Knowledge of self-assessment methods in order to increase the participa-
ш	G. Skill in using inspection findings in reviewing JSAs and operating proce-	tion of workers in inspections.
''	dures. H. Skill in obtaining information during inspections.	O.Knowledge of safety, health and environment and how to integrate continuous improvement into the operations.
Safety, and	A. Knowledge of company policies and procedures for conducting regular safety and housekeeping tours.	E. Skill in identifying the conflicts between compliance requirements and regulations and company policy.
Environ- B. mental	<ol> <li>Knowledge of which personnel should be included in the inspection of an area.</li> </ol>	F. Knowledge of the government reporting requirements to ensure compliance.
	C. Knowledge of inspection requirements for waste stream handling.  D. Knowledge of company procedures for safety, health, and environmental	G. Knowledge of the government-required inspections that apply to the worksite to include them in the inspection procedures.
tions	audits.	H. Knowledge of the required certifications and licensures to incorporate int the inspection procedures.
	A. Skill in using incident reports to track all incidents.  B. Knowledge of required inspection documentation to assure that inspec-	D. Knowledge of the existing forms and formats used to document inspections and ensure the information can be properly reviewed.
Require-	tion results are accurately completed and stored.	E. Knowledge of the corrective action logs to identify trends.
	C. Knowledge of what inspected areas/items need to be documented.	F. Knowledge of company documentation and communication policies.
	A. Knowledge of operations and functions of area being inspected. B. Skill in delegating safety responsibilities to departments so that they	<ul> <li>D. Knowledge of company protocol to be able to inform appropriate departments of inspection results.</li> </ul>
and Procedures C	take ownership of safety issues.  C. Knowledge of company policy on written warnings and disciplinary actions.	E. Knowledge of company policies regarding personnel qualified to conduct inspections.

Cr	itical Work Function	on: Conduct preventive health, safety, and/or environmental inspections
Knowledge/skill	Mean Importance	Examples
	<del>_</del>	3.59 Keep computerized recordkeeping of inspection findings
		Compile findings using word processor and email to all parties
Using Information and		Develop PC forms for company personnel to document inspections
Communication Technology		Use visual aid to record the inspection, use internet to communicate the result of inspection
	<del>_</del>	Conduct safety walkthroughs and document and communicate via email
	<del>_</del>	Use Excel to analyze several months of inspection data to look for trends
		Document inspections and place on database for future assessment
Gathering and Analyzing	<u> </u>	
Information		3.87 Use old and new information to analyze health and safety outcome
Illiorniation	_	Gather information from inspections and audits on a regular basis
	_	Document conditions observed during walk through inspections
	<u> </u>	Conduct visual inspections with employee involvement and feedback
	_	Analyze inspection results to group and prioritize findings
	_	
	$\neg$	Conduct field audits of compliance with critical safety, health, environmental procedures
		Identify potential hazards as part of the walk through
		Develop a plan of action to address info received from inspection; identify who will be accountable to resolve these
Analyzing and Solving Problems		3.53 issues
	<del>_</del>	Review past experience to foresee problems before they may occur
	_	Look for OSHA violations that pertain to your workplace
	_	Analyze workplace application of health, safety, and/or environmental policy and determine if practice complies with
		requirements
Making Decisions and Judgments		3.34 Determine risk vs. abatement for preventive measures
making becisions and daugments	<del>_</del>	Visually inspect machines to ensure safety-related guards are in place
	<del>_</del>	Determine the frequency with which inspections should be done
	_	Prioritize by judgments of departmental inspections
	_	Have safety audit available
	_	Safety team to observe and then brainstorm for prevention
	_	Modify manufacturing process to attain adequate level of safety
	<u> </u>	Decide if condition is out of specification and should be noted
		Books it contained to out of openineation and chould be ficted
Organizing and Planning		3.50 Establish the monthly schedule for when health and safety audits will be conducted
	<del>_</del>	Identify persons accountable to perform safety inspections
	_	Organize inspection results to make better training units
	<del>_</del>	Allocate appropriate amount of time for inspections in planning
	<del>_</del>	Organize documentation and findings for easy analysis
	<del>_</del>	

	Organize inspection team
Using Social Skills	3.10 Ask questions in a respectful manner in order to get accurate and complete answers  Discuss inspection findings with work area supervisor  Conduct inspections in a friendly, non-threatening manner  Maintain open dialogue with workers during inspections  Report inspection findingswhether good or badin a professional manner
Adaptability	2.83 Reschedule meeting to discuss findings  Be adaptable to meet verification schedules  One's attitude must adapt to persons being interviewed  Adapt to a new computer format for entering data
Working in Teams	3.42 Participate as part of a team during inspections  Conduct safety audit with health safety committee represented by Union/mgmt, and other employees  Form teams of employees with various skills to perform inspections  Create and work through committees to accomplish safety procedures
Leading Others	3.03 Guide others to use preventive measures that will help in health and safety issues  Ensure the team uses good inspection techniques  Lead inspection team (SAME AS # 2?)  Share inspection findings in a way that causes employees to want to improve their performance  Lead by example and coach others on safe work practices
Building Consensus	Reach consensus on inspection results so that the report will be acted upon     Discuss suggestions with incumbent workers     Have all parties concerned take time to evaluate hazards, so everybody becomes involved
Self and Career Development	Maintain knowledge of preventive measures     Attend a life safety code seminar to improve hazard identification and compliance knowledge and skills
Speaking	Discuss findings with supervisor to prioritize activities     Verbally communicate inspection results     Discuss relevant safety issues with workers during inspection     Present inspecting reports at employee safety meetings     Speak to worker when performing inspection and audit to determine accuracy of information
Listening	3.50 Listen to reports of affected individuals  Listen to operator when discussing equipment preventive maintenance procedures to check for understanding  Safety committee members should bring unsafe areas and acts to the attention of the workers on line  Solicit employee feedback during field inspection

		Listen when employees relate hands-on experiences
\A		
Writing	_ 3.91	Fill out inspection forms accurately and with sufficient detail to describe findings
	_	Supply written documentation of safety hazards to supervisors
	_	Write letter to management summarizing inspection findings
	_	Fill out inspection report (SAME AS # 1?)
		Write up specific procedures to be followed for safety inspections
D !!	0.50	
Reading	_ 3.59	Review safety records
	_	Read operation manuals prior to beginning a preventive inspection
	<del>_</del>	Modify manufacturing process to attain adequate level of safety (process details)
	_	Read findings to determine who should be informed
		Read regulatory compliance instructions for all materials and equipment
Math	_ 2.56	Calculate simple statistics of accident and injury rates
	_	Verify analysis results
	_	Use math and geometry to estimate trends
	_	Evaluate industrial hygiene monitoring data to determine compliance (pints per millio/8-hour day)
	_	Use statistics in meetings that are held with all relevant groups to educate individuals about health
Science	3.25	Understand the mechanisms of action for equipment, chemicals and process safety engineering
	_	Review MSDS to obtain suggested health and safety changes
	_	Apply principles of science to compile a report for future risk reduction
	_	Use knowledge of physical science to identify potential hazards during inspections
	_	Use knowledge of ergonomics (e.g., air, lighting, etc.) to ascertain proper settings using regulatory documentation
	_	Ose knowledge of ergonomics (e.g., air, lighting, etc.) to assertain proper settings using regulatory documentation
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#### HSE<sub>4</sub>

#### Critical Work Function: Implement health, safety and/or environmental programs, Critical work functions projects, policies or procedures.

describe the major responsibilities involved in carrying out a concentration

**Concentrations** are the major areas of frontline work covering families of related jobs. Separate standards were identified for each concentration.

#### **Key Activities Key activities** are **Performance Indicators** the duties and tasks **Performance indicators** correlate to the key activities. The performance indicators involved in carrying out a critical work provide information on how to determine when someone is performing each key function activity competently Document regulatory Regulatory compliance activities are completed according to schedule and specifications. Compliance documentation meets all regulatory, legal and company standards. compliance Current list of applicable regulations is accessible to all parties as required. Compliance documentation is on file and accessible to all relevant parties. Sign-off sheets for compliance are maintained. Communicate Health, safety and environmental policies are visible in the workplace. company health, Multiple methods are used to communicate policies and procedures. safety and environ-Records of worker notification of policies and procedures are on file. mental policies and Communication is delivered in a timely manner to correct parties. procedures Feedback from workers is sought to determine effectiveness of communications. Communication methods are modified based on worker feedback. Stop unsafe work Manufacturing process is modified to attain adequate levels of safety. practices Unsafe behavior is immediately corrected and communicated to correct parties. Notice of unsafe practices is documented in appropriate forum and format. Corrective action for unsafe work practices are recorded on preventive maintenance or departmental safety Safety policies updated on a regular basis. Observations and review of safety records demonstrate reduction in targeted injuries or unsafe behaviors. New manufacturing processes are planned to avoid unsafe practices. Suggest solutions that All relevant parties are included in the development of safety solutions. will eliminate unsafe Follow- up meetings with all appropriate parties are held to discuss the solution. practices Proposed solution has been tested and revised as necessary. Suggestions are documented and forwarded to correct parties. Report violations Violation reports, including disciplinary action where appropriate, are on file. Violation reports are distributed to responsible party. to appropriate authorities Violations are communicated to the proper authorities according to legal, regulatory and company policy. Chain of command is used to ensure corrective action is taken. Appropriate channels are used to report health, safety and environmental concerns. Prepare for health, Employee and fire emergency plans are developed in advance of the emergency. safety and/or Developed employee and fire emergency plans are followed during emergency. environmental Emergency equipment is available in working order. emergencies Employees are properly trained in emergency procedures. Emergency drills are completed on a regular basis according to company policies and procedures.

Describes what a worker needs to know or be able to do to perform the critical work function

### ACADEMIC AND EMPLOYABILITY SKILLS

Skill	Overal netical	or oreologic	Complexity Dimension	Complexity Subdimension	Cardinative to the contract of
Math	NA	L	Complexity of mathematics content	Number sense and computation Geometry, measurement, and spatial sense Complexity of data analysis, statistics, and probability Functions and algebraic thinking Complexity of representation and communication	NA NA NA NA
			Complexity of problem solving	Mathematical methods Mathematical reasoning Mathematical tools	NA NA NA
Science	L	L	Complexity of scientific inquiry	Design Use of evidence	L M
			Complexity of understanding the nature of science	Unifying concepts and processes	М
			Complexity of core scientific content	Physical science Life science Earth and space science	M L L
			Complexity of applied science	Science and technology Science in personal and social perspective	M M
Reading	М	М	Complexity of text		М
			Complexity of reading skills Complexity of reading purpose		M
Weiting	M	М	Complexity of text	Complexity of text	
Writing	M	M	•	, , ,	M
			Complexity of writing product	Type of product Organization	M M
				Elaboration	M
			Complexity of writing process	Writing development	м
				To inform	М
				To persuade	М
Listening	М	M M	M Complexity of communication	Content complexity	M
				Demands on attention Communication indirectness	M
			Barriers to communication	Limitations on interaction Distractions	M
Co colina		н	Complexity of communication	Contact complexity	
Speaking	М		Complexity of communication	Content complexity Tact and sensitivity required	M
				Communication indirectness	L
			Context demands	Diversity of audience	м
				Constraints on preparation	М
				Distractions Listener resistance	M M
Using	NA	L	Complexity of technology application	Complexity of equipment or technology	
Using Information	NA	_	Complexity of technology application	Complexity of equipment of technology  Complexity of applications	NA NA
and Com-				Training time constraints	NA
munications Technology			Frequency of technology change	New learning required	NA
Gathering	М	М	Difficulty of information gathering	Amount of information	м
and			Difficacty of information gathering	Number and variety of sources	M
Analyzing Information				Resourcefulness needed	М
Information			Complexity of analysis	Complexity of information and analysis	
			Complexity of analysis	Need to evaluate source information	M

#### ACADEMIC AND EMPLOYABILITY SKILLS

Skill	Orecological	odes Overall legical	Complexity Dimension	Complexity Subdimension	Control of the state of the sta
Analyzing and Solving	zing M	M	Problem complexity	Problem uniqueness or difficulty Number and range of problems	M M
Problems			Solution complexity	Number and complexity of possible solutions	М
Making	М	М	Degree of judgment or inference required	Lack of guidance or precedents	M
Decisions and				Integration difficulty  Quantity or ambiguity of risks and consequences	M M
Judgments			Individual decision-making responsibility	Accountability and autonomy Absence or ambiguity of rules or	М
				policy constraints	М
Organizing	М	М	Complexity of plans	Goal complexity or ambiguity	M
and Planning				Flexibility required	M
				Resource coordination required	M
				Scope and effects of planning	М
			Constraints on planning	Lack of guidelines	М
			' "	Lack of feedback	М
				Constraints on resource availability	M
Using Social	М	М	Complexity of social interactions	Diversity	м
Skills				Structure or protocol required	М
				Tact and sensitivity required	М
Adaptability	М	M M	Degree of adaptability required	Frequency of change	M
			Difficulty of adapting	Unpredictability of change	М
			, , ,	Lack of support for change	M
Working in Teams	М	М	Degree of collaboration required	Task interdependence	М
			Team member heterogeneity	Team diversity	M
			Goal or role ambiguity	Lack of clarity or support for team goals	М
			Course unibigary	Lack of clarity or stability of responsibilities	M
Leading	М	М	Work challenges	Challenges to goal attainment	М
Others				Work structuring requirements	M
				Scope and complexity of leadership responsibility	М
			People challenges	Coaching or monitoring needs	М
				Conflict management needs	М
Building	М	м	Consensus process inhibitors	Number and diversity of stakeholders	М
Consensus				Ambiguity of goals	M
				Lack of organizational support, incentives, or	
				consensus leadership	M
				High consensus standard	М
			Difficulty of issues requiring consensus	Complexity of issues	М
			22, 2	Contentiousness of issues	M
				Lack of opportunities for agreement	M
Self and Career	NA	М	Need for learning and development	Self and career development requirements	NA
Develop-			Limitations on learning and development	Time, resource, or support constraints	NA
ment			opportunities	Application constraints	NA NA

Overall complexity ratings: The overall level of complexity required in a skill in order to perform the critical work function. Scale: H=high complexity; M=moderate complexity; and L=low complexity. Two separate ratings are provided: one for workers (entry-level up to first-line supervisors) and the other for supervisors (first-line supervisors). In some cases, the overall complexity rating was NA (Non-Applicable). This means that this skill was deemed not to be needed to perform this given critical work function, so no complexity rating was assigned.

Complexity Subdimension ratings: These are complexity level ratings for individual aspects of the particular skill. Scale: H=high complexity; M=moderate complexity; and L=low complexity. At this time, these ratings are provided for workers only. In some cases, the subdimension complexity rating was NA (Non-Applicable). This means that this particular dimension of the skill was deemed not to be needed to perform this given critical work function, so no complexity rating was assigned.

Describes what a worker needs to know or be able to do to perform the critical work function

#### OCCUPATIONAL AND TECHNICAL KNOWLEDGE AND SKILLS

These are the technical knowledge and skills needed to perform the critical work function.

Skill Category	Specific Knowledge and Skills	Specific Knowledge and Skills
Implemen- tation Procedures	<ul> <li>A. Knowledge of how to work with outside consultants/trainers to confirm that performance complies with health, safety, and environmental standards.</li> <li>B. Knowledge of health, safety, and environmental policies and procedures to develop sign-off sheets to verify new policy was covered with employees.</li> <li>C. Knowledge of industry best practices to be able to offer top quality solutions to health, safety, and environmental problems.</li> <li>D. Knowledge of the methods that are available to learn about health, safety, and environmental policies and procedures.</li> <li>E. Skill in using existing formats to report violations.</li> <li>F. Knowledge of the appropriate methods used to communicate policies and procedures (i.e. safety meetings, newsletter, memo, Internet/Intranet.)</li> <li>G. Knowledge of procedures, authorities, and approvals to stop unsafe practices.</li> <li>H. Knowledge of Lock-out/ Tag-out procedures and other safety procedures.</li> </ul>	I. Knowledge of how to motivate employees for safe behavior.     J. Skill in conducting follow-up meetings to develop safety or environmental solutions for a particular department or process.     K. Knowledge of common safety mistakes and misunderstandings to include them into future safety recommendations.     L. Skill in conducting simulated emergency response plans to test tools, equipment, technologies, and applications.     M.Skill in preparing a Job Safety Analysis, so that the job can be done safely and the equipment required is available.     N. Knowledge of procedures used to track whether contractors comply with health, safety, and environmental standards.     O. Knowledge of procedures for keeping and updating records of who is qualified to work on different pieces of equipment.     P. Skill in judging whether a recommended modification is realistic in attaining the appropriate balance between safety and the need to carry out the process.      Q. Knowledge of procedures, authorities, and approvals to stop unsafe practices
Certifica- tion/ Licensure	A. Knowledge of the kinds of certifications required for different types of work (e.g., certification for using an overhead crane).      B. Skill in ensuring that those certifications and licenses that are needed are actually obtained and maintained on record.      C. Skill in creating and maintaining a permit system for confined space entry.	D. Knowledge of the need to update certifications when equipment or processes have changed.  E. Knowledge of fall protection equipment and certification requirements.  F. Knowledge of job functions to determine certification requirements.  G. Skill in discerning competence of the employee seeking certification.
Business Policies and Procedures	A. Knowledge of company policy regarding suspected drug and alcohol use.     B. Knowledge of company health, safety, and environmental policies and procedures.     C. Knowledge of notification procedures for recommended corrective actions.     D. Knowledge of the procedures to update company health, safety and environmental programs.	E. Knowledge of Human Resource policy to determine what is the appropriate disciplinary action for safety violations.  F. Knowledge of organizational chart to ensure that all those affected by changes are notified.  G. Skill in effectively enforcing a "stop work" program.  H. Knowledge of emergency response drills and procedures.  I. Knowledge of company procedures for reporting violations and findings to outside agencies.
Health, Safety, and Environ- mental Rules and Regula- tions	A. Knowledge of the Federal Code of Regulations, Occupational Safety and Health Administration (OSHA), Environmental Protection Agency (EPA), Department of Transportation (DOT) and other applicable agencies and authorities.  B. Skill in evaluating whether individuals or departments are in compliance with regulatory, legal and company standards.  C. Skill in incorporating and updating health, safety, and environmental regulations into company policies and procedures.  D. Knowledge of how to access information on regulations in order to stay current.	E. Knowledge of the required Personal Protective Equipment (PPE) such as safety glasses, hard hats, steel toe shoes, ear plugs, etc.  F. Knowledge of mandatory plant safety rules and specific job safety training requirements.  G. Knowledge of Occupational Safety and Health Administration (OSHA) and Environmental Protection Agency (EPA) reporting requirements.  H. Knowledge of criminal and civil penalties that can result when erroneous or false data is submitted to agencies.  I. Knowledge of employee notification rules to inform employees of important safety changes.
Emergency Response	A. Knowledge of techniques for conducting realistic and challenging drills and simulations to ensure personnel are adequately prepared and conditioned to respond appropriately.     B. Knowledge of emergency plans to conduct safety training.     C. Knowledge of what emergency equipment is required for specific areas to ensure equipment is available.     D. Knowledge of evacuation and fire drill plans to ensure that those plans are followed.	E. Knowledge of local response groups including EMS, fire department, and hospitals to structure the best site emergency plans.  F. Knowledge of the maintenance schedule for emergency equipment to ensure that equipment will be functional at needed times.  G. Knowledge of outside resources that are available to assist in emergency situations.  H. Knowledge of mandatory reporting requirements regarding emergency response actions.
Safety Documen- tation	A. Knowledge of what documentation is needed to comply with company procedures.     B. Knowledge of regulatory reporting requirements to meet regulations and comply with the law.	C. Skill in preparing corrective action reports to prevent future incidents and emergencies.

Critical Work	<b>Function: Impleme</b>	ent health, safety, and/or environmental programs, projects, policies or procedures
Knowledge/skill	Mean Importance	Examples
	<del></del>	Store programs and findings RTK information on computer database
	<u>—</u>	Use overhead projector and VCR during orientation for new employees
	<u>—</u>	Use Word or Publisher to develop posters, flyers, post reminders, etc.
		1.09 Use Email to notify employees/supervisors of new programs and policies.
Using Information and		
Communication Technology		Use email, voice mail, copy machines to provide notice of meetings, minimum standards, possible hazards, etc.
	<u>—</u>	Use environmental reporting software (e.g., plantware to document an RCRA solid waste transfer)
	<u>—</u>	Maintain regulatory compliance documents on file in "soft" copy
	<u>—</u>	Communicate violations to all key personnel via email or voice mail
		Use health and safety regulation database to implement programs, via telephone, fax, printed procedures.
Gathering and Analyzing	•	
Information		3.52 Verify that licenses and certificates are up-to-date
		Perform job safety and health analysis to identify employee hazards and selection of personal protective equipment
		for engineering controls
		Review data to suggest solutions for unsafe practices and to plan for emergency actions
		Track participation in programs, in order to update present or future policies or procedures
		Gather sign-off sheets signed at start of shift to assure that work stations are organized and safe
	<u></u>	Review risk assessment and mitigation analysis reports to update emergency response plans
	_	Review compliance with health, safety, and environmental requirements by examining records and field reports
Analyzing and Solving Problems	<u></u>	3.57 Analyze new programs to determine changes that may need to be made
		Troubleshoot malfunctioning equipment
		Critique an emergency response to identify techniques or actions requiring alterations
		Obtain information regarding possible problems prior to developing an emergency action plan
		Making sure all policies and procedures are in place prior to the start-up of a new line or process
	•	
<b>Making Decisions and Judgments</b>	<u>.                                    </u>	3.72 Identify corrective actions based on company policy
		Decide what emergency action plans are required and needed for a facility
	<u></u>	Review government regulations, make decisions for incorporation into policy and procedure manuals
		Evaluate alternative actions to determine actual unsafe work practices
	<u></u>	Base decisions on risk/benefit and consequence
	<u></u>	Assess dangers inherent in emergency situations and prepare emergency plans
	<u></u>	Identify manufacturing processes that must be changed
		Recognize and treat unsafe work practices found during inspections
Organizing and Planning		3.83 Prepare emergency evacuation plans
	<del>_</del>	,

	Identify certified employees and organize work assignments to match
_	Develop action plan for implementing new regulation
	Maintain an organized filling system for regulatory and legal documents
	Develop a comprehensive plan for procedure implementation
	201010F & comprehensive plant to proceed a miple mentalion
Using Social Skills	3.59 Show tact and respect when stopping unsafe work practices
	Stop an unsafe behavior and provide constructive feedback in a manner that the employee can accept (SAME AS #
	<u>1?)</u>
	Notify all parties of violations in a tactful and professional manner
	Correct unsafe behaviors found during inspections in a professional manner, emphasizing the reason for following a
	procedure
Adaptability	3.40
	Change programs as laws and company policies change
	Implement employee suggestions related to work methods
	Use several methods to collect feedback
	Modify emergency response plans (structure, strategy, tactics) based on new conditions
	Change procedures to meet changing production demands
Washing in Target	O.74 West with successful standards and a marine successful along
Working in Teams	3.74 Work with cross functional team to revise evacuation plans
	Coordinate effective team response to emergencies
	Use task force to review all policies and procedures
	Participate on teams to investigate regulatory compliance, and handle environmental emergencies
	Use team to review safety of new installation prior to commissioning and start-up
Leading Others	3.83 Instruct others on the positive approach to safety
3	Use your influence to see that implementation takes place and that the teams promote it
	Lead team responsible for implementing new policy (fall prevention and arrest)
	Motivate employees through communication of programs and concerns. Let them know their health is your concern
	Persuade management to adopt a new safety policy
Building Consensus	3.55 Facilitate consensus on goals of health, safety, and/or environmental programs
	Negotiate changes in work procedures
	Combine advice from several others before implementing ideas
	Reach agreement in proper implementation of documented procedures and policies
	Vote on policies and procedures during meetings
Calf and Career Development	2.07 Maintain and abtain additional contitional
Self and Career Development	2.67 Maintain and obtain additional certifications
	Being able to implement programs and procedures to safety can also improve your career
	Attend a workshop on work process analysis and diagramming to facilitate integrating good health, safety, and/or
	environmental practices with production tasks

	Obtain-certification and licenses required for each job (SAME AS # 1?)
	Speak to your supervisor about training regarding employee counseling
Speaking	3.70 Inform workers of unsafe behaviors
	Monitor progress by addressing policies that will affect workforce and convey company safety programs to train
	accordingly
	Explain to individual employees how new procedure will work
	Discuss solutions with appropriate parties in follow-up meetings
	Verbalize policies and programs to elicit employee comprehension
Listening	3.78 Listen to feedback to evaluate problems in employees' understanding
Listering	Discuss safety resolution actions with operator and listen for understanding (SAME AS # 1?)
	Receive feedback from employees on how best to implement policy, procedure, etc.
	Solicit and pay attention to employee feedback about health, safety, and/or environmental policies and procedures
	Listen to solutions that are discussed in follow-up meetings
	Listen for employee acceptance or non-acceptance of safety policies in the workplace to determine areas for new
	programs
Writing	3.78 Write description of program in words that employees can understand
writing	Complete safety procedure checklist
	Write safety posters and other relevant informational materials
	Write a procedure to implement a new regulation
	write a procedure to implement a new regulation
Reading	3.82 Read and interpret corrective action reports
	Read government regulations to verify compliance
	Read new regulation to determine if and how rule will impact work area
	Read federal register to obtain information about new federal requirements (SAME AS # 3?)
Math	2.53 Calculate measures for air monitoring
	Calculate emission load per regulatory requirements for last 20 months
_	Calculate OSHA recordable injury frequency rate
Saianaa	2.22 Manitan air gualitu lavala
Science	3.22 Monitor air quality levels
	Use physics, kinetics, and ergonomics to modify process for greater safety  Follow up with additional information related to health and safety to ensure physical, chemical, and biological
	guidelines are followed
	Test chemicals and materials used for critical exposure levels
	1001 offernicals and materials used for official exposure levels

#### HSE<sub>5</sub>

## Critical Work Function: Implement continuous improvement in health, safety Critical work functions and/or environmental assurance practices.

describe the major responsibilities involved in carrying out a concentration

**Concentrations** 

line work cover-

dards were iden-

tified for each

concentration.

ing families of

related jobs. Separate stan-

are the major areas of front-

**Key Activities** 

Key activities are the duties and tasks involved in carrying out a critical work function

**Performance Indicators** 

**Performance indicators** correlate to the key activities. The performance indicators provide information on how to determine when someone is performing each key activity competently

Analyze root causes or problems and prioritize which problems need to be addressed first

Priorities are clearly identified, documented and communicated. Goals and problems are prioritized based on appropriate data. Appropriate data analysis methods are selected.

Data analysis documentation is accurately completed.

Priorities are determined with input from workers and management.

Analyze health, safety and environmental data Analysis contains sufficient detail to meet applicable standards.

Documentation of analysis is accurately completed.

Raw data is available for inspection.

Company's health, safety and environmental assurance trends are compared against industry health, safety and environmental assurance trends.

Analysis is forwarded to correct parties.

Appropriate analysis methods are selected and properly used.

 $\label{lem:propriate} \mbox{ Appropriate and accurate metrics are available or developed to use in the analysis.}$ 

 $\label{lem:decomposition} \textbf{Data} \ \textbf{is} \ \textbf{communicated} \ \textbf{using} \ \textbf{charts}, \ \textbf{graphs} \ \textbf{or} \ \textbf{tables} \ \textbf{in} \ \textbf{written} \ \textbf{conclusions} \ \textbf{and} \ \textbf{plans}.$ 

Determine projects to address priorities

Projects are designed to support and reinforce established company goals. All relevant parties are involved in the development of the project.

Projects are scheduled in a timely manner.

Project plans are complete, detailed and include the resource requirements.

Benchmark health, safety and environmental practices

Appropriate information is gathered from recognized industry leaders.

 $Independent\ evaluations\ of\ worksite\ health,\ safety\ and\ environmental\ assurance\ practices\ are\ performed.$ 

Improvements are recommended based on benchmarking information.

Analysis comparing current practice against benchmark data is conducted and documented.

Information is gathered regarding excellent health, safety and environmental assurance practices through a variety of means.

Maintain knowledge of policies and procedures for health, safety and/or environmental issues Workshops, conferences and other career development sessions are attended.

Involvement in a professional society relevant to job activities is ongoing.

Up-to-date resources on health, safety and environmental assurance are accessible to all relevant parties.

**About the Work** 

Describes what a worker needs to know or be able to do to perform the critical work function

### ACADEMIC AND EMPLOYABILITY SKILLS

Skill	One confidering	ot over like it	Complexity Dimension	Complexity Subdimension	OFFICE STATES
Math	NA	М	Complexity of mathematics content	Number sense and computation Geometry, measurement, and spatial sense Complexity of data analysis, statistics, and probability Functions and algebraic thinking Complexity of representation and communication	NA NA NA NA
			Complexity of problem solving	Mathematical methods Mathematical reasoning Mathematical tools	NA NA NA
Science	М	М	Complexity of scientific inquiry	Design Use of evidence	M M
			Complexity of understanding the nature of science	Unifying concepts and processes	М
			Complexity of core scientific content	Physical science Life science Earth and space science	M M L
			Complexity of applied science	Science and technology Science in personal and social perspective	M M
Reading	М	Н	Complexity of text Complexity of reading skills Complexity of reading purpose		H M M
Writing	М	м	Complexity of text	Complexity of text	М
			Complexity of writing product	Type of product Organization Elaboration	H M M
			Complexity of writing process	Writing development To inform To persuade	M H M
istening	М	М	Complexity of communication	Content complexity Demands on attention Communication indirectness	M M M
			Barriers to communication	Limitations on interaction Distractions	M M
Speaking	М	M M	Complexity of communication	Content complexity Tact and sensitivity required Communication indirectness	M M M
			Context demands	Diversity of audience Constraints on preparation Distractions Listener resistance	M M M
Using Information and Com-	М	М	Complexity of technology application	Complexity of equipment or technology Complexity of applications Training time constraints	M M M
munications Technology			Frequency of technology change	New learning required	М
Gathering and Analyzing	н	М	Difficulty of information gathering	Amount of information Number and variety of sources Resourcefulness needed	H H M
Information			Complexity of analysis	Complexity of information and analysis  Need to evaluate source information  Lack of analysis guidelines	M M M

#### ACADEMIC AND EMPLOYABILITY SKILLS

Skill	Overall desiry	odes Oder of the state of	ct.igo <sup>ts</sup> Complexity Dimension	Complexity Subdimension	OFFICE STATES
Analyzing and Solving	н	М	Problem complexity	Problem uniqueness or difficulty Number and range of problems	H H
Problems			Solution complexity	Number and complexity of possible solutions	н
Making Decisions and	М	М	Degree of judgment or inference required	Lack of guidance or precedents Integration difficulty Quantity or ambiguity of risks and consequences	M M M
Judgments	<b>S</b>		Individual decision-making responsibility	Accountability and autonomy Absence or ambiguity of rules or policy constraints	M M
Organizing M and Planning	М	М	Complexity of plans	Goal complexity or ambiguity Flexibility required Resource coordination required Scope and effects of planning	М М Н
			Constraints on planning	Lack of guidelines Lack of feedback Constraints on resource availability	M M M
Using Social Skills	М	М	Complexity of social interactions	Diversity Structure or protocol required Tact and sensitivity required	H M M
Adaptability	М	М	Degree of adaptability required  Difficulty of adapting	Frequency of change Unpredictability of change Lack of support for change	M M
Working in Teams	М	М	Degree of collaboration required  Team member heterogeneity  Goal or role ambiguity	Task interdependence  Team diversity  Lack of clarity or support for team goals Lack of clarity or stability of responsibilities	M M M
Leading Others	М	М	Work challenges  People challenges	Challenges to goal attainment Work structuring requirements Scope and complexity of leadership responsibility  Coaching or monitoring needs Conflict management needs	M M M
Building Consensus	М	М	Consensus process inhibitors  Difficulty of issues requiring consensus	Number and diversity of stakeholders Ambiguity of goals Lack of organizational support, incentives, or consensus leadership High consensus standard Complexity of issues	M M M
			Difficulty of issues requiring consensus	Contentiousness of issues Lack of opportunities for agreement	M M M
Self and Career Develop-	М	М	Need for learning and development  Limitations on learning and development	Self and career development requirements  Time, resource, or support constraints	M M
ment			opportunities	Application constraints	M

Overall complexity ratings: The overall level of complexity required in a skill in order to perform the critical work function. Scale: H=high complexity: M=moderate complexity: and L=low complexity. Two separate ratings are provided: one for workers (entry-level up to first-line supervisors) and the other for supervisors (first-line supervisors). In some cases, the overall complexity rating was NA (Non-Applicable). This means that this skill was deemed not to be needed to perform this given critical work function, so no complexity rating was assigned.

Complexity Subdimension ratings: These are complexity level ratings for individual aspects of the particular skill. Scale: H=high complexity: M=moderate complexity: and L=low complexity. At this time, these ratings are provided for workers only. In some cases, the subdimension complexity rating was NA (Non-Applicable). This means that this particular dimension of the skill was deemed not to be needed to perform this given critical work function, so no complexity rating was assigned.

Describes what a worker needs to know or be able to do to perform the critical work function

#### OCCUPATIONAL AND TECHNICAL KNOWLEDGE AND SKILLS

These are the technical knowledge and skills needed to perform the critical work function.

Skill Category	Specific Knowledge and Skills	Specific Knowledge and Skills
Profes- sional Develop- ment	A. Knowledge of the available classes, workshops, and conferences, which will provide current information on existing policies and procedures.  B. Skill in participating in safety organizations and attending classes of Occupational Safety and Health Administration (OSHA), Environmental Protection Agency (EPA), Department of Transportation (DOT) and other applicable agencies.  C. Skill in researching industry magazines, news, announcements, seminars, and discussion groups to get information on new policies and procedures.	D. Knowledge of the importance of and how to access OSHA Letters of Interpretation about recording injuries/illnesses.  E. Knowledge of company professional development programs in order to stay current with health, safety and environmental issues.  F. Ability to develop a network of health, safety, and environmental professionals, in and out of the industry, to develop a database of professionals and best practices.  G. Skill in using information technology to access health, safety and environmental information.
Project Manage- ment	A. Skill in time management to address or follow up specific items as necessary.     B. Skill in setting clear priorities based on input from workers and management, documenting them and communicating them to the appropriate parties.     C. Skill in scheduling projects and staffing in a timely manner.     D. Skill in creating employee involvement in health, safety and environmental projects.	<ul> <li>E. Skill in using charts and graphs to support health, safety, and environmental policies.</li> <li>F. Knowledge of how to sequence events appropriately when planning a project (e.g., notify agency of intent, design/install).</li> <li>G. Knowledge of the resources available to determine budget for projects.</li> <li>H. Knowledge of the health, safety, and environmental risks to prioritize which programs are implemented first.</li> </ul>
Business Policies and Procedures	A. Knowledge of when new equipment is needed to ensure the safety of production processes.      B. Knowledge about the organization's critical health, safety, and environmental goals to be able to set appropriate program priorities.      C. Knowledge of engineering plans for projects so that the safety, health and environmental impacts are considered.	<ul> <li>D. Knowledge of company direction to incorporate health, safety and environmental concerns into continuous improvement efforts.</li> <li>E. Knowledge of company's mission and how health, safety and environmental projects fit in with that mission.</li> <li>F. Knowledge of the key parties that should be involved in prioritizing continuous improvement efforts in the area of health, safety, and environmental programs.</li> </ul>
Continuous Improve- ment Process	A. Knowledge of health, safety, and environmental risks associated with new products, chemicals, procedures, and changes in machinery.  B. Knowledge of continuous improvement processes for manufacturing in order to determine the health, safety, and environmental implications.  C. Skill in developing a database of jobs and their safety risks to implement corrective action.  D. Knowledge of risk analysis to ensure jobs are performed safely and efficiently.  E. Skill in assessing relative risk of hazards based on impact to workforce and community.  F. Skill in data collection and analysis to use in the continuous improvement process (e.g., accident and injury data, lost time accidents and records of interventions).	G. Knowledge of techniques for tracking environmental compliance and identifying health, safety and environmental improvements (i.e., reduce waste, minimize scrap, and minimize loss of product through leaks, spills, and evaporation).  H. Knowledge of how to find out about new technology for containing and monitoring hazardous materials (i.e., through periodicals, internet, sales people).  I. Knowledge of the steps to take to effectively collect the data for root cause analysis.  J. Knowledge in identifying qualified vendors for continuing improvement education.
Bench- marking	A. Knowledge of similar industries or companies with strong health, safety, and environmental programs to add to benchmarking activities.     B. Knowledge of where to find industry standards in order to benchmark.     C. Knowledge of industry health, safety, and environmental performance measures and trends to be able to judge performance and recommend improvements to processes.	D. Knowledge of how to compare accident loss rates for your organization compared to others in the industry.     E. Knowledge of where to find information on industry trends (i.e., Bureau of Labor Statistics, Workers Compensation Boards) in order to benchmark performance.
Analysis Techniques	A. Knowledge of the accepted methods to analyze health, safety, and environmental data.     B. Knowledge of data analysis techniques (histograms, trend charts, control limits) to be able to properly judge performance metrics.	C. Skill in analyzing potential solutions for effectiveness, advantages, and limitations.  D. Skill in communicating conclusion of data analysis to inform appropriate individuals and agencies.

About the Worker

Knowledge/skill	Mean Importance	t continuous improvement in health, safety, and/or environmental assurance practices  Examples	
Micagerskiii		3.59 Use personal computer database to access safety recurrences	
Using Information and		Document positive improvement of programs on word processor	
Communication Technology		Benchmark against prior experience and best in class standard/record	
Communication recimology	<u>—</u>	Use prior reports of injury on the job to address prior unseen issues	
	<del>_</del>	Use statistical analysis tools to analyze safety performance data for trends and areas for improvement	
	<u>—</u>	Use internet to compare company's trends against industry trends	
	_	Ose internet to compare company's trends against industry trends	
Gathering and Analyzing	•		
Information		3.80 Analyze information on accidents and injuries	
	_	Complete data analysis for problem solving	
	_	Have health and safety committee meet on a regular basis to implement any improvements in the program	
	_	Collect information and observations during routine inspections	
	<u> </u>	Keep data on safety concerns with employee feedback and corrective action	
	_	Intergrate new information into the continous improvement process as soon as it is available	
	_	Analyze performance trend data for injuries	
	<del></del>	Interview industry leaders to establish benchmarks	
Analyzing and Solving Problems	_	3.59 Develop a revised work process to reduce employee exposure (or potential for exposure) to a hazardous substance Maintain leadership position by continuing to modify process/procedures to meet and exceed workplace health and safety and environmental concerns	
	_	Keep up to date in changing policies in order to implement change	
	<u> </u>	Use benchmarking from the best to implement new practices	
	_	Use statistical analysis to determine if trend is statistically significant	
Making Decisions and Judgments	•	3.86 Analyze company safety records to identify trends	
Making Decisions and Judgments	<u>s                                     </u>	3.86 Analyze company safety records to identify trends  Prioritize which training and process changes need to be done first	
Making Decisions and Judgments	<u>-</u>	Prioritize which training and process changes need to be done first	
Making Decisions and Judgments	<u>\$</u>	Prioritize which training and process changes need to be done first  Continuously update SOP's	
Making Decisions and Judgments	<u>}</u>	Prioritize which training and process changes need to be done first Continuously update SOP's Decide which actions will eliminate unsafe conditions in the most effective and cost-efficient way	
Making Decisions and Judgments	<u>s</u>	Prioritize which training and process changes need to be done first  Continuously update SOP's  Decide which actions will eliminate unsafe conditions in the most effective and cost-efficient way  Prioritize problems/solutions according to analysis of injury/incident data (SAME AS # 2?)	
Making Decisions and Judgments	<u>s</u>	Prioritize which training and process changes need to be done first Continuously update SOP's Decide which actions will eliminate unsafe conditions in the most effective and cost-efficient way	
Making Decisions and Judgments  Organizing and Planning	3	Prioritize which training and process changes need to be done first  Continuously update SOP's  Decide which actions will eliminate unsafe conditions in the most effective and cost-efficient way  Prioritize problems/solutions according to analysis of injury/incident data (SAME AS # 2?)	
	<u>-</u>	Prioritize which training and process changes need to be done first  Continuously update SOP's  Decide which actions will eliminate unsafe conditions in the most effective and cost-efficient way  Prioritize problems/solutions according to analysis of injury/incident data (SAME AS # 2?)  Select improvement projects that are big enough to matter, but small enough to accomplish	
	<u>-</u>    	Prioritize which training and process changes need to be done first  Continuously update SOP's  Decide which actions will eliminate unsafe conditions in the most effective and cost-efficient way  Prioritize problems/solutions according to analysis of injury/incident data (SAME AS # 2?)  Select improvement projects that are big enough to matter, but small enough to accomplish  3.76 Develop project plans for implementing new safety programs	
	<u>s</u>	Prioritize which training and process changes need to be done first  Continuously update SOP's  Decide which actions will eliminate unsafe conditions in the most effective and cost-efficient way  Prioritize problems/solutions according to analysis of injury/incident data (SAME AS # 2?)  Select improvement projects that are big enough to matter, but small enough to accomplish  3.76 Develop project plans for implementing new safety programs  Plan dates to attend education seminars for environmental training	

Using Social Skills	3.07 Discuss best practices with experts Gaining rapport with counterparts helps keep up to date Use social skills to obtain a buy-in from affected parties for new health, safety, and environmental practices Interact with management and workers to ensure ongoing improvements and suggestions from both Solicit employee input when evaluating health, safety, and/or environmental programs' effectiveness
Adaptability	3.27 Suggest improvements as conditions change  Be willing to switch ideas as new information dictates  Analysis of cause's requires adaptability to implement changes  Change policies, work processes, etc., to accommodate new organizational structure while maintaining health, safety, and/or environmental performance levels  Change procedures when increases in incidents occur
Working in Teams	3.57 Form a network with other health, safety, and/or environmental experts  Get feedback from workers to ensure better implementation of improvements  Facilitate team charged with changing work methods and practices to improve safety performance  Develop worker safety teams to provide suggestions for improvement  Serve as a member of a site health, safety, and/or environmental advisory team or point safety committee
Leading Others	3.23 Serve as chair of committee to set priorities Inform workers and employees of the need to upgrade safety issues as they arrive Lead team responsible for defining project plan Influence co-workers to accomplish job assignments by providing safe working conditions Use statistics and benchmark data to set higher goals for health, safety, and/or environmental performance
Building Consensus	3.69 Resolve problems by working on a problem solving team  Gain management approval for an engineering fix that will be a more positive, but also more expensive, solution than an administrative fix  atmosphere  Modify proposal to incorporate employee suggestions in new health, safety, and/or environmental policy  Vote on policies to be implemented
Self and Career Development	3.33  Interview industry leaders to establish benchmarks  Learn additional statistical analysis techniques for more refined safety performance monitoring and assessment  Identify supplementary skills that will enhance skills and develop plan to master those skills  Attend training on health and safety practices
Speaking	3.33 Express expectations regarding continuous improvement efforts  Tell employees of changes in personal protective equipment available  Give persuasive arguments as to why a course of action will (or will not) achieve the intended outcome

	_	Present improvement project plans to decision-makers
		committee
	_	Communicate continous safety improvements verbally by directing the workforce on future safety related programs
Listening	3.61	Discuss root causes in team format
	_	Use good listening and observation skills to pick up on best practices of others
	_	Receive information to continue improvement in health and safety
	_	Receive feedback from employees about reasons and remedies for an unsafe situation
		Listen for new ideas and procedures that could be used to upgrade the environment of worker safety
Writing	3.66	Write suggestions for continuous improvement activities
		system)
	_	Compile data from meetings, inspections, and investigations and document them in a clear, concise manner
	_	Implement continuous improvement in verbal and written form to ensure safe work performance
	_	Write a report recommending changes in programs and policies
Reading	3.69	Read and review the best benchmarks available in order to develop new ones
	_	Review records on environmental assurance practices
	_	Read memoranda from management about changes in work rules
	_	Read and evaluate employee safety suggestions
	_	Review regulatory policies on a pre-determined, timely basis to assure awareness of safety
Math	2.69	Graph past results in order to project future
	_	Do statistical analysis to determine if trend is statistically significant
	_	Use statistical methods to measure rate of change or improvement
Science	3.07	Use scientific method to identify and verify root cause
	_	Perform research in order to identify changes in recommended work practices
	_	Evaluate exposure data to determine if health or safety hazards exists
	_	Understand volatility, flammability, and toxicity of materials
	_	
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#### HSE<sub>6</sub>

#### Critical Work Function: Promote health, safety and/or environmental assurance Critical work functions programs.

describe the major responsibilities involved in carrying out a concentration

#### **Key Activities**

#### **Key activities** are the duties and tasks involved in carrying out a critical work function

#### Performance Indicators

Performance indicators correlate to the key activities. The performance indicators provide information on how to determine when someone is performing each key activity competently

#### Advocate for workplace safety

Workplace safety posters and other relevant information are visible.

Manufacturing practices for health, safety and environmental assurance are identified, modeled, recognized and publicized.

Workers responsible for health, safety and environmental assurance are regularly present in manufacturing workplace to encourage good health, safety and environmental assurance practices.

Opportunities are actively sought to communicate with employees regarding health, safety and environmental assurance practices.

#### **Concentrations** are the major areas of frontline work covering families of related jobs. Separate standards were iden-

tified for each concentration.

#### Suggest health, safety and/or environmental assurance programs to management and other workers

Materials supporting health, safety and environmental assurance programs are on file

Suggestions supporting health, safety and environmental assurance are documented.

Suggestions supporting health, safety and environmental assurance are forwarded to all relevant parties. Suggestions are based on an accurate assessment of employee needs and interests, requirements in the workplace and business objectives.

Data and statistical analysis are discussed with decision-makers.

Meetings are held with all relevant parties to advocate for health, safety and environmental assurance

Benefits of high quality health, safety and environmental assurance programs are marketed using various methods.

#### Evaluate health, safety and/or environmental assurance programs

Recordable illness, injury and other health, safety and/or environmental assurance incidents are maintained, evaluated, and reported continuously.

Health, safety and/or environmental assurance log information is maintained.

Evaluations are communicated to correct parties in a timely manner.

Evaluations are used to improve the outcomes of health, safety and/or environmental assurance programs. Self-assessment studies on health, safety and environmental assurance programs are on file. Health, safety and/or environmental assurance statistics are compared with industry benchmarks or

standards.

#### **Educate others** about the benefits of workplace health, safety and/or environmental assurance programs

Materials supporting health, safety and/or environmental assurance programs are clear and appropriate for

Health, safety and/or environmental assurance materials are on file and accessible.

Meetings are held with all relevant groups to educate individuals about health, safety and/or environmental

Benefits for and elements of high quality health, safety and/or environmental assurance programs are advertised using various methods.

New hires are educated about the company's commitment to safety.

Continuing education is provided to employees.

Education includes cost-benefit analysis of workers' compensation programs.

Describes what a worker needs to know or be able to do to perform the critical work function

### ACADEMIC AND EMPLOYABILITY SKILLS

Skill	One Courts the	st. Overoll det	Complexity Dimension	Complexity Subdimension	Cardination NA	
Math NA	NA	L	Complexity of mathematics content	Number sense and computation Geometry, measurement, and spatial sense Complexity of data analysis, statistics, and probability Functions and algebraic thinking Complexity of representation and communication	NA NA NA NA	
			Complexity of problem solving	Mathematical methods Mathematical reasoning Mathematical tools	NA NA NA	
Science	NA	L	Complexity of scientific inquiry	Design Use of evidence	NA NA	
			Complexity of understanding the nature of science	Unifying concepts and processes	NA	
			Complexity of core scientific content	Physical science Life science Earth and space science	NA NA NA	
			Complexity of applied science	Science and technology Science in personal and social perspective	NA NA	
Reading	М	мм	Complexity of text		М	
•			Complexity of reading skills Complexity of reading purpose		M	
			1 / 01 1		M	
Writing	М	M	Complexity of text	Complexity of text	М	
			Complexity of writing product	Type of product	М	
				Organization Elaboration	M M	
			Сотр			
				Complexity of writing process	Writing development To inform	M
				To persuade	M	
Listening	М	М	Complexity of communication	Content complexity	М	
•			,,	Demands on attention	M	
				Communication indirectness	М	
			Barriers to communication	Limitations on interaction	M	
				Distractions	М	
Speaking	M	н	Complexity of communication	Content complexity	М	
				Tact and sensitivity required Communication indirectness	M	
					M	
			Context demands	Diversity of audience	M	
				Constraints on preparation Distractions	M	
				Listener resistance	M	
Using	L	L	Complexity of technology application	Complexity of equipment or technology	L	
Information	_			Complexity of applications	L	
and Com- munications Technology				Training time constraints	М	
			Frequency of technology change	New learning required	М	
Gathering	м	м	Difficulty of information gathering	Amount of information	М	
and		141	, , , , , , , , , , , , , , , , , , , ,	Number and variety of sources	M	
Analyzing Information				Resourcefulness needed	М	
oi mation			Complexity of analysis	Complexity of information and analysis	М	
				Need to evaluate source information	M	
				Lack of analysis guidelines	L	

#### ACADEMIC AND EMPLOYABILITY SKILLS

Skill	Overall periods	ot out of the city	Complexity Dimension	Complexity Subdimension	Cerdina est mones
Analyzing and Solving		М	Problem complexity	Problem uniqueness or difficulty Number and range of problems	M M
Problems			Solution complexity	Number and complexity of possible solutions	M
Making	М	М	Degree of judgment or inference required	Lack of guidance or precedents	M
Decisions and				Integration difficulty  Quantity or ambiguity of risks and consequences	M M
Judgments			Individual decision-making responsibility	Accountability and autonomy Absence or ambiguity of rules or policy constraints	M M
Overnining	M		Complexity of plans		
Organizing and Planning	М	М	Complexity of plans	Goal complexity or ambiguity Flexibility required	M M
and realining				Resource coordination required	M
				Scope and effects of planning	M
				coope and effects of planning	.,,
			Constraints on planning	Lack of guidelines	М
				Lack of feedback	M
				Constraints on resource availability	М
Using Social	М	М	Complexity of social interactions	Diversity	М
Skills			, ,	Structure or protocol required	M
				Tact and sensitivity required	М
Adaptability	Adaptability M	L	Degree of adaptability required	Frequency of change	М
			Difficulty of adapting	Unpredictability of change	М
			, , ,	Lack of support for change	М
Working in M Teams	М	М	Degree of collaboration required	Task interdependence	М
			Team member heterogeneity	Team diversity	М
			Goal or role ambiguity	Lack of clarity or support for team goals	м
			course role unbigarty	Lack of clarity or stability of responsibilities	M
Leading	М	М	Work challenges	Challenges to goal attainment	м
Others	.*1			Work structuring requirements	M
<b></b>				Scope and complexity of leadership responsibility	M
			People challenges	Coaching or monitoring needs	м
			T copie chance. Geo	Conflict management needs	M
Building	М	м	Consensus process inhibitors	Number and diversity of stakeholders	м
Consensus	IVI	I MI	Consensus process minibilors	Ambiguity of goals	M
Conscisus				Lack of organizational support, incentives, or	.71
				consensus leadership	М
				High consensus standard	M
			Difficulty of issues requiring consensus	Complexity of issues	М
			,,	Contentiousness of issues	M
				Lack of opportunities for agreement	M
Self and Career	NA	М	Need for learning and development	Self and career development requirements	NA
Develop-			Limitations on learning and development	Time, resource, or support constraints	NA
ment			opportunities	Application constraints	NA NA

Overall complexity ratings: The *overall* level of complexity required in a skill in order to perform the critical work function. *Scale*: H=high complexity; M=moderate complexity; and L=low complexity. Two separate ratings are provided: one for *workers* (entry-level up to first-line supervisors) and the other for supervisors (first-line supervisors). In some cases, the overall complexity rating was NA (Non-Applicable). This means that this skill was deemed not to be needed to perform this given critical work function, so no complexity rating was assigned. Complexity Subdimension ratings: These are complexity level ratings for individual aspects of the particular skill. *Scale*: H=high complexity; M=moderate complexity; and L=low complexity. At this time, these ratings are provided for workers only. In some cases, the subdimension complexity rating was NA (Non-Applicable). This means that this *particular dimension* of the skill was deemed not to be needed to perform this given critical work function, so no complexity rating was assigned.

Describes what a worker needs to know or be able to do to perform the critical work function

#### OCCUPATIONAL AND TECHNICAL KNOWLEDGE AND SKILLS

These are the technical knowledge and skills needed to perform the critical work function.

Skill Category	Specific Knowledge and Skills	Specific Knowledge and Skills
Training	A. Knowledge of marketing techniques to develop company orientation programs for temporary and new hires.      B. Knowledge of safety videos, books and computer-based learning tools to develop a safety library for training and information.      C. Knowledge of the importance of participating in health and safety self-assessment programs.	D. Knowledge of the methods to conduct safety meetings, safety training, and family involvement programs.  E. Skill in educating new hires about the company's commitment to safety and the environment.  F. Knowledge of worker rights and responsibilities as described in government procedures and policies (e.g., 29CFR1910) in order to educate workers and management.
Bench- marking	A. Knowledge of company accident statistics to be able to calculate and compare a company's "incident rate" with the national average for the industry.      B. Skill in comparing health, safety, and environmental statistics to industry standards or benchmarks	C. Knowledge of best manufacturing practices for health, safety, and environmental assurance.  D. Knowledge of Health, Safety, and Environmental programs that have succeeded in other locations in order to improve or suggest new programs.  E. Skill in communicating benchmarking results to appropriate individuals to promote continuous improvement.
Promotion Processes	<ul> <li>A. Skill in promoting good health, safety, and environmental practices to the workforce.</li> <li>B. Skill in implementing safety awareness programs and conducting award meetings.</li> <li>C. Skill in identifying what types of incentives work (e.g., the role of positive feedback in motivating workers to comply with rules) and how they can be used to promote safe behavior.</li> <li>D. Skill in creating and promoting safety information programs.</li> <li>E. Skill in developing, implementing, and updating a computerized information system to allow all employees to access Material Safety Data Sheets, Job Safety Analyses, and Standard Operating Procedures.</li> </ul>	<ul> <li>F. Knowledge of different opportunities to communicate health, safety, and environmental practices (i.e., newsletters, memos, fax, e-mail, Internet/Intranet and meetings.) to employees.</li> <li>G. Knowledge of how to get promotional materials from safety equipment suppliers.</li> <li>H. Knowledge of how to raise awareness of the need for joint union and management health and safety committees.</li> <li>I. Use of promotional techniques that make every employee aware that safety is a top priority.</li> <li>J. Knowledge of the health, safety, and environmental policies in order to act as an advocate for workplace safety.</li> </ul>
Documen- tation	A. Skill in documenting health and safety successes (e.g. record of days without lost time, accidents) in promoting continuous health and safety improvements.	
Analysis Techniques	A. Skill in evaluating data to ensure that relevant data is collected from programs.     B. Knowledge of how to assess the value and potential success of health, safety, and environmental program proposals.     C. Knowledge of how to effectively assess employee safety suggestions to decide which suggestions should be acted upon.	D. Skill in using health, safety, and environmental measurements to evaluate program performance.      E. Knowledge of the various measurements used to assess the effectiveness of health, safety and environmental assurance programs.
Business Policies and Procedures	A. Knowledge of possible internal barriers to a safe workplace to be an advocate.      B. Skill to know whether health, safety and environmental suggestions are in line with and supported by company mission and policy.	C. Knowledge of company health, safety, and environmental needs in order to develop an effective training plan.  D. Knowledge of properly designated internal decision-makers so that proposals are submitted to appropriate parties.

Cı	ritical Work Functi	ion: Promote health, safety, and/or environmental assurance programs
Knowledge/skill	Mean Importance	Examples
Using Information and	<del>-</del>	3.59 Use PC to create health, safety, and/or environmental updates or articles for company newsletter
Communication Technology		Document and record injuries and illnesses using software programs (e.g., BLR)
	_	Obtain motivational resources via internet
	_	Develop promotional materials and posters using word processing and publishing software
	_	Use internet to access industry/nation safety performance statistics
		Uses email, telephone, fax, and printing procedures to promote programs
Gathering and Analyzing		
Information		3.48 Complete health and safety audit results to present to supervisors
	_	Review data to gather facts to support advocacy position
	_	Ensure that material supporting safety assurance programs are clear and appropriate to employees
	<del>-</del>	Develop presentation or "white paper" to convince management to budget for an health, safety, and/or environmental
		improvement project
Analyzing and Solving Problems	_	3.47
	_	Assess if proposed engineering solution is necessary and sufficient to mitigate hazard
		Evaluate effectiveness of current promotional materials
	_	
Making Decisions and Judgments	_	3.41 Determine with whom to talk about safety issues, and the best time to intervene
	<u> </u>	Determine what group to target for maximum results
	<u> </u>	Decide what educational materials are needed for refresher training
	<u> </u>	Determine ways to promote safety in the workplace
	_	Evaluate the safety program and make changes to be more efficient
		Find promotional methods that will be effective with the target audience
Organizing and Planning	_	3.59 Develop new brochure containing company safety practices
	_	Organize the data from work place injuries in a form suitable to give to managers
	<u> </u>	Plan procedures based on experience to motivate employees
	<u> </u>	Plan for the worker that would like to go further in his or her knowledge of safety
	_	Create a plan to implement a new safety agenda
	<u>-</u>	Develop a health, safety, and/or environmental promotion plan
Using Social Skills		3.83 Use enthusiasm and energy in direct communication with employees
	_	Be able to converse with workers or students to promote their observance towards safety issues
	_	Maintain open, friendly relationship with workers to maintain proper feedback
	_	Communicate new programs and policies by emphasizing the value of the change to the employee

Adaptability  Working in Teams	Adapt different promotion techniques for different audiences  Adapt to different personalities when promoting programs (SAME AS # 1?)  Increase awareness of accidents and injuries by taking input from other areas of your industry and adapt them to current situation  Entertain new ideas for achieving health, safety, and/or environmental goals as business priorities change  Adapt ideas and methods to the culture and values in the organization  3.77 Conduct safety meetings  Promote health, safety, and/or environmental goals using word of mouth campaigns and team competitions  Team up with your supervisor to create a safer work environment  Charge team with increasing employee involvement in safety activities
Leading Others	Work with teams to meet goals and provide inspiration for the promotion of safety (SAME AS PREVIOUS?)  3.90 Act as role model for other team members regarding the use of safety equipment (SAME AS # 3?)
	Encourage others to help inform the new hires of company policies  Serve as a role model for safe, healthful and environmentally responsible behavior; take proactive safety measures, follow rules, etc.  Inspire workers to advocate safety through meetings, postings, rewards and recognition  Influence a worker through recognition and/or reward to improve safety practices (SAME AS # 4?)
Building Consensus	3.66 Promote new safety practices at a team meeting  Create consensus by promoting mutual goals  Work with others sharing goals and new ideas to implement safety practice and programs  Get alignment and buy-in from team charged with implementing a new health, safety, and/or environmental program  Sell organization on the need to conduct safety awareness campaign
Self and Career Development	2.00 Become knowledgeable about career development actions taken by co-workers  Investigate model programs for best safety practices  Suggestion of improvements provides an avenue for personal development within an organization  Promoting safety programs makes others believe their health is a concern of yours  Learn more about individual and organizational behavior barriers to improved health, safety, and/or environmental performance or risk protection  Attend training on public speaking to become more effective with your promotional meetings
Speaking	3.81 Make presentations to management regarding changes in safety practices  Explain to workers why minimizing spills and releases of potentially hazardous materials is important  Conduct meetings to ensure worker awareness and compliance  Conduct meetings promoting safety issues  Present clear and precise verbal instructions to workforce to establish safety goals
Listening	3.63 Listen to concerns from an employee about a safety violation

	Assure employees that you hear and share their concerns
	Evaluate employees' non-verbal reactions to new policies
	Listen to worker feedback regarding the effectiveness of safety and environmental assurance programs
Writing	3.75 Write convincing promotional materials
	Draft report on current safety trends
	Develop presentations explaining new safety requirements to workers
	Document all suggestions and forward to appropriate personnel
	Design slogans for health and safety programs
Reading	3.76 Review safety log
	Reading vendor information and current trade publications
	Read data and statistical analysis and responses from decision-makers
	Read literature in professional journals describing alternate methods to improve health, safety, and/or environmental
	performance
	Read workplace safety posters
Math	2.23 Use basic math to explain risks and hazards
	warranted
	Use quantitative methods
	Use cost benefit calculations to show management why a program to improve health, safety, and/or environmental
	performance is justified
Science	2.69 Promote changes in safety programs due to environmental changes
	Use scientific and medical data to encourage others not to risk injury and stay informed
	Select promotional techniques that have a high likelihood of achieving desired results
	Use awareness programs such as: safety posters, safety reminder, and biological testing for exposure levels
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#### Critical Work Function: Conduct job safety and health analysis for jobs, equip-Critical work functions ment and processes.

describe the major responsibilities involved in carrying out a concentration

**Concentrations** are the major

areas of front-

line work cover-

ing families of

Separate standards were iden-

tified for each

concentration.

related jobs.

#### **Key Activities**

#### **Key activities** are the duties and tasks involved in carrying out a critical work function

#### **Performance Indicators**

Performance indicators correlate to the key activities. The performance indicators provide information on how to determine when someone is performing each key activity competently

Consult with outside sources about health, safety and environmental assurance aspects of jobs

List of relevant outside sources is accurately maintained.

Postings of current emergency contact information are accessible to all relevant parties.

Contact log is maintained.

Participate in the development of job safety analysis

Meetings are held with all relevant parties to conduct job safety analysis.

Suggestions for job safety improvements are generated.

Relevant data is documented and analyzed.

One-on-one and small group meetings are held with workers to identify job safety issues.

Observations are made at worksites on a regular basis to gather information for job safety analysis.

Gather information from employees about occupational hazards

Employees are observed on a regular basis for safe work behaviors and practices. Records of employee interviews regarding occupational hazards are maintained. Safety reports and statistics are published and distributed to relevant parties. A method is provided for employees to report safety concerns to relevant parties.

Suggest ways to eliminate hazards Suggestions for eliminating the hazard are on file. Safety-related work orders are completed in a timely manner.

Suggestions are communicated to correct parties. Suggestions are relevant and appropriate.

Regularly verify job safety analysis against experience

Job safety analysis is evaluated with relevant injury and worksite data.

Employees are interviewed to gain their input.

**About the Work** 

Describes what a worker needs to know or be able to do to perform the critical work function

### ACADEMIC AND EMPLOYABILITY SKILLS

Skill	Ore Compains	ot oreologist	Complexity Dimension	Complexity Subdimension	GRÜZBÜĞÜ		
Math NA	NA	L	Complexity of mathematics content	Number sense and computation Geometry, measurement, and spatial sense Complexity of data analysis, statistics, and probability Functions and algebraic thinking Complexity of representation and communication	NA NA NA NA		
			Complexity of problem solving	Mathematical methods Mathematical reasoning Mathematical tools	NA NA NA		
Science	L	М	Complexity of scientific inquiry	Design Use of evidence	M M		
			Complexity of understanding the nature of science	Unifying concepts and processes	L		
			Complexity of core scientific content	Physical science Life science Earth and space science	L L NA		
			Complexity of applied science	Science and technology Science in personal and social perspective	M M		
Reading	М	М	Complexity of text		М		
•			Complexity of reading skills		M		
			Complexity of reading purpose		M		
Writing	M	M M	Complexity of text	Complexity of text	M		
			Complexity of writing product	Type of product	M		
				Organization Elaboration	M		
				Complexity of writing process	Writing development	М	
			complexity of writing process	To inform	M		
				To persuade	М		
Listening	M	М Н	Complexity of communication	Content complexity	М		
				Demands on attention Communication indirectness	M		
				Communication indirectness	M		
			Barriers to communication	Limitations on interaction	M		
				Distractions	M		
Speaking	М	М	Complexity of communication	Content complexity	M		
				Tact and sensitivity required Communication indirectness	M M		
			Context demands	Diversity of audience Constraints on preparation	M		
				Distractions	M		
				Listener resistance	М		
Using	М	L	Complexity of technology application	Complexity of equipment or technology	М		
Information			, , , , , , , , , , , , , , , , , , , ,	Complexity of applications	М		
and Com- munications			5 6 1 1	Training time constraints	M		
Technology			Frequency of technology change	New learning required	M		
Gathering	н	М	Difficulty of information gathering	Amount of information	Н		
and Analyzing				Number and variety of sources Resourcefulness needed	H M		
Information							
			Complexity of analysis	Complexity of information and analysis  Need to evaluate source information	M M		
				Lack of analysis guidelines	M		

#### ACADEMIC AND EMPLOYABILITY SKILLS

Skill	Overall delica	odes overall destriction	Complexity Dimension	Complexity Subdimension	Charles for the contract of th	
Analyzing and Solving		М	Problem complexity	Problem uniqueness or difficulty Number and range of problems	M M	
Problems			Solution complexity	Number and complexity of possible solutions	М	
Making Decisions and Judgments	М	М	Degree of judgment or inference required	Lack of guidance or precedents Integration difficulty Quantity or ambiguity of risks and consequences	M M M	
juagments			Individual decision-making responsibility	Accountability and autonomy Absence or ambiguity of rules or policy constraints	M M	
Organizing and Planning	М	М	Complexity of plans	Goal complexity or ambiguity Flexibility required Resource coordination required Scope and effects of planning	M M M	
				Constraints on planning	Lack of guidelines Lack of feedback Constraints on resource availability	M M M
Using Social Skills	М	М	Complexity of social interactions	Diversity Structure or protocol required Tact and sensitivity required	M M M	
Adaptability	М	L	Degree of adaptability required  Difficulty of adapting	Frequency of change Unpredictability of change Lack of support for change	M M M	
Working in Teams	М	M	Degree of collaboration required  Team member heterogeneity	Task interdependence Team diversity	M M	
			Goal or role ambiguity	Lack of clarity or support for team goals Lack of clarity or stability of responsibilities	M M	
Leading Others	М	M	Work challenges  People challenges	Challenges to goal attainment Work structuring requirements Scope and complexity of leadership responsibility Coaching or monitoring needs	м м м	
Building Consensus	М	м м	Consensus process inhibitors	Number and diversity of stakeholders Ambiguity of goals Lack of organizational support, incentives, or consensus leadership High consensus standard	M M M	
			Difficulty of issues requiring consensus	Complexity of issues Contentiousness of issues Lack of opportunities for agreement	M M M	
Self and Career	NA	М	Need for learning and development	Self and career development requirements	NA	
Develop- ment			Limitations on learning and development opportunities	Time, resource, or support constraints Application constraints	NA NA	

Overall complexity ratings: The *overall* level of complexity required in a skill in order to perform the critical work function. *Scale*: H=high complexity: M=moderate complexity: and L=low complexity. Two separate ratings are provided: one for *workers* (entry-level up to first-line supervisors) and the other for supervisors (first-line supervisors). In some cases, the overall complexity rating was NA (Non-Applicable). This means that this skill was deemed not to be needed to perform this given critical work function, so no complexity rating was assigned.

Complexity Subdimension ratings: These are complexity level ratings for individual aspects of the particular skill. *Scale*: H=high complexity: M=moderate complexity: and L=low complexity. At this time, these ratings are provided for workers only. In some cases, the subdimension complexity rating was NA (Non-Applicable). This means that this *particular dimension* of the skill was deemed not to be needed to perform this given critical work function, so no complexity rating was assigned.

Describes what a worker needs to know or be able to do to perform the critical work function

#### OCCUPATIONAL AND TECHNICAL KNOWLEDGE AND SKILLS

These are the technical knowledge and skills needed to perform the critical work function.

Skill Category	Specific Knowledge and Skills	Specific Knowledge and Skills
Job Safety and Health Analysis	A. Skill in checking for safe work behaviors and practices through interviews and job observation methods.  B. Skill in using an ergonomics self-assessment questionnaire to gather ergonomic risk information.  C. Knowledge of techniques used to study new work procedures in order to develop new training.  D. Skill in analyzing components of a machine, or process to identify safety hazards.  E. Knowledge of which Job Safety Analysis methods to use given the situation.  F. Skill in incorporating data gained through regularly observing work procedures and personnel to update JSA.  G. Knowledge of the available databases that provide current information on industry standards.  H. Knowledge of techniques to assess the safety efficiency, and productivity of new equipment.	<ol> <li>Skill in maintaining a resource list of outside job safety and health analysis experts.</li> <li>Skill in assembling various groups of people to develop and improve programs.</li> <li>K. Knowledge of how to collect information from equipment manufacturers regarding safety aspects before equipment is installed.</li> <li>L. Knowledge of techniques used for analyzing the safety of new products to make better purchasing decisions.</li> <li>M.Skill in interviewing employees to gain their input on health and safety issues and problems.</li> <li>O. Knowledge about safety incident reporting principles to be able to educate others.</li> <li>P. Skill in researching and collecting the specific occupational hazards that apply to a given industry.</li> <li>Q. Knowledge about the limitations of the data results from the Job Safety Analyses (JSAs).</li> </ol>
Corrective Action	A. Skill in comparing accident and injury trends to Job Safety Analysis results to identify unsafe conditions and practices.     B. Skill in implementing changes based on findings discovered during observations and interviews.     C. Knowledge of how to develop a follow-up system to monitor safety work orders.	D. Knowledge of which health, safety, and environmental suggestions are relevant and appropriate.  E. Knowledge of work orders to ensure that safety- related improvements are completed in a timely manner  F. Skill in immediately identifying and communicating discovered safety hazards to appropriate personnel
Business Policies and Procedures	A. Knowledge of official job descriptions to ensure safety accountabilities are clear.      B. Skill in observing work practices to ensure they comply with approved methods and procedures.      C. Knowledge of the importance of employee recognition procedures (i.e., safety awards, incentive programs, certificates to recognize good safety behavior).	D. Knowledge of job process procedures to develop accurate Job Safety Analyses.      E. Knowledge of policies regarding resources available to assist in developing suggestions for eliminating hazards.
Documen- tation	A. Skill in maintaining a log of suggestions for how to eliminate hazards that can be used as part of the Job Safety Analysis process.     B. Skill in comparing incident rate reduction data between time periods.	C. Knowledge of how to document the disposition of written suggestions.  D. Skill in preparing Job Safety Analysis documentation
Outside Health, Safety, and Environ- mental Assurance Resources	A. Knowledge of outside resources that can assist in the job safety analysis process.     B. Knowledge of vendors specializing in job safety analysis.	C. Knowledge of information technology resources to assist in job safety analysis.

Critic	al Work Function:	Conduct job safety and health analysis for jobs, equipment, and processes
Knowledge/skill	Mean Importance	Examples
Using Information and	<del></del>	
Communication Technology		3.61 Enter accident and injury rates in database
		Use word processor to develop job safety and health analysis job description for each task
	<del></del>	Plan meetings using scheduling programs, teleconference, and email
	<del></del>	Use OSHA library, videos, literature, internet access in order to keep current with changing technology
		use computer (e.g., Microsoft Access, Word) to document job safety analysis
		Manage database for employee safety suggestion system
		Use direct personal communication as well as email, telephone, fax, and internet to accomplish analysis
Gathering and Analyzing		
Information		4.03 Interview employees about hazards (SAME AS # 6?)
	<u></u>	Get information from vendors and suppliers on how new processes will affect the operator or worker
	<del></del>	Meet and discuss safety concerns with workers
	<del></del>	Do comparisons between outside and internal
		Collect safety observations and concerns for transmittal to safety committee
		Talk to individual employees about safety trends and their concerns
		Determine if use of personal protective equipment alone is sufficient to mitigate hazard  Analyze process for potential hazards and institute preventive measures
Making Decisions and Judgments		3.61 Judge relative risks when conducting job safety analysis
Making Decisions and Judgments	_	Decide which suggestions may be used to eliminate job hazards
	<u> </u>	Determine ways to control hazards until elimination of the hazard can occur
	_	Determine if repair or replacement is necessary after inspection of equipment
	<del>_</del>	etc.)
	_	Develop processes after evaluating risks and benefits
		Develop processes after evaluating risks and benefits
Organizing and Planning		3.63 Develop checklist for identifying machine hazards
	_	Plan when to meet with outside consultants on environmental issues
	_	Review and revise job descriptions to incorporate job safety analysis
	_	Plan a scheduled review of job safety records
	_	Employees are interviewed to gain their input

Using Social Skills	3.50 Use tact and respect when interviewing employees and supervisors
	Persuading others to join the safety team made the difference in eliminating hazards on the job
	Meetings with employees elicit open, accurate, high-quality information about hazards, work practices, attitudes
	Maintain open, friendly relationship with workers to get proper feedback
Adaptability	3.10 Develop new safety practices
	Use info from outside sources to adapt processes to increase safety and health
	Be open to how other business expectations, pressures, work process changes, etc., can affect efficacy of health, safety, and/or environmental rules, practices and behaviors
Working in Teams	3.66 Participate as a member of safety analysis team
	Set up joint team of safety officials and maintenance personnel to better implement safety policies
	Attend meetings with manufacturing personnel and consult with outside sources for process improvement
Leading Others	3.13 Conduct focus group related to safety
	Take charge of safety in the workplace and strive for compliance
	Motivate workers to be proactive to actions which are protective of themselves, their co-workers and the community
	Give constructive feedback to employees who are not following required procedures
Building Consensus	3.24
	Facilitate reaching agreement on how best to mitigate hazard identified in a job analysis
	Discuss improvements in order to develop analysis
Self and Career Development	1.67 Participate in small group meetings to take advantage of shared learning experiences
	manner
Speaking	3.19 Ask questions when developing job safety analysis
	Interview employees to identify potentially hazardous areas
	Hold a discussion on workplace safety and concerns about equipment or procedures
	Present suggestions for process improvement
	Report findings to manager
Listening	3.72 Listen to those involved in jobs, equipment or process
	Interviewing employees helps to validate safety analysis
	Analyze all info along with records and listen to others for their ideas
	Receive feedback on job health issues concerning all employees and family
	Interview employees for their input
Writing	3.52 Create written operating procedures
willing	Document inspection process
	Fill out the personal protective equipment hazard assessment form so that it complies with agency requirement
1	i iii out the personal protective equipment hazaru assessinent ionn so that it compiles with agency requirement

	·
	Document findings from employee interviews
	Fill in pre-written forms after conducting routine safety audits
Reading	3.94 Read manufacturer's documents for machinery
	Read hazard analyses to determine mitigation measures needed
	Review notes and suggestions from meetings, inspections, investigations, etc.
	Read summary of employee survey data about perceptions of job safety
	Review relevant data necessary to make an analysis
Math	2.90 Calculate air sampling results to determine hazards
	Develop ratios for equipment usage and maintenance.
	Correlate job analysis findings with injury/illness data
	Evaluate risk using statistical methods
	Calculate statistics on lost work cases
	Document scientific data to improve methods and process to keep safety and environmental concerns at a high
Science	3.32 priority
	Apply principles of kinetics, physics and ergonomics
	Use knowledge of physical science in evaluating health and safety hazards
·	Interview employees to determine if a tool needs to be ergonomically redesigned
	Determine personal protective equipment by utilizing earplugs for noise, safety glasses, gloves, when necessary to
	determine biological hazards
Science	Apply principles of kinetics, physics and ergonomics  Use knowledge of physical science in evaluating health and safety hazards  Interview employees to determine if a tool needs to be ergonomically redesigned  Determine personal protective equipment by utilizing earplugs for noise, safety glasses, gloves, when necessary to

#### HSE8

## Critical Work Function: Maintain a safe and productive work area.

#### Critical work functions

describe the major responsibilities involved in carrying out a concentration

#### **Key Activities**

#### Key activities are the duties and tasks involved in carrying out a critical work function

#### **Performance Indicators**

**Performance indicators** correlate to the key activities. The performance indicators provide information on how to determine when someone is performing each key activity competently

#### Perform environmental and safety inspections

Potential hazards in the work are identified, reported, monitored.

Corrective action is taken to correct potential hazards.

Health, safety and environmental documentation and policies are thoroughly and regularly reviewed. Inspections meet all relevant, health, safety, and environmental laws and regulations.

Inspections are done according to company schedule and procedures.

Inspections are documented.

Inspection records are stored correctly.

### Perform emergency drills and participate in emergency response teams

Training and certification on relevant emergency and first aid procedures is complete and up to date. Emergency response complies with company and regulatory policies and procedures.

Emergency drills and incidents are documented promptly according to company and regulatory procedures.

# Identify unsafe conditions and take corrective action

Conditions that present a threat to health, safety and the environment are identified, reported, and documented promptly.

Corrective actions are identified.

Appropriate parties are consulted about corrective actions.

Corrective actions are taken promptly according to company procedures.

Ongoing safety concerns are tracked and reported until corrective action is taken.

# Provide safety orientation to other employees

 $Orientation\ covers\ all\ topics\ and\ procedures\ needed\ to\ facilitate\ employee\ safety.$ 

Orientation makes clear the need and processes for employees to raise safety concerns, ask questions, and receive additional training.

Orientation is documented according to company requirements.

Orientation meets all relevant laws, policies, and regulations.

Safety training is delivered regularly.

#### Concentrations are the major areas of frontline work covering families of related jobs. Separate standards were identified for each concentration.

Describes what a worker needs to know or be able to do to perform the critical work function

### ACADEMIC AND EMPLOYABILITY SKILLS

Skill	One County of the	overoll death	Complexity Dimension	Complexity Subdimension	Cardination NA
Math	NA	L	Complexity of mathematics content	Number sense and computation Geometry, measurement, and spatial sense Complexity of data analysis, statistics, and probability Functions and algebraic thinking Complexity of representation and communication	NA NA NA NA
			Complexity of problem solving	Mathematical methods Mathematical reasoning Mathematical tools	NA NA NA
Science	L	L	Complexity of scientific inquiry	Design Use of evidence	L L
			Complexity of understanding the nature of science	Unifying concepts and processes	L
			Complexity of core scientific content	Physical science Life science Earth and space science	M NA NA
			Complexity of applied science	Science and technology Science in personal and social perspective	L NA
Reading	М	М	Complexity of text		М
			Complexity of reading skills		M
			Complexity of reading purpose		М
Writing	L	М	Complexity of text	Complexity of text	М
			Complexity of writing product	Type of product	M
				Organization Elaboration	M
			Complexity of writing process	Writing development	L
			Compression or mining process	To inform	M
				To persuade	L
Listening	M	М	Complexity of communication	Content complexity	М
				Demands on attention Communication indirectness	M L
				Communication manectness	
			Barriers to communication	Limitations on interaction Distractions	M
					141
Speaking	М	М	Complexity of communication	Content complexity Tact and sensitivity required	M
				Communication indirectness	L
			Context demands	Diversity of audience	
			Context demands	Constraints on preparation	M
				Distractions	M
				Listener resistance	М
Using	L	L	Complexity of technology application	Complexity of equipment or technology	L
Information				Complexity of applications Training time constraints	L M
and Com- munications Technology			Frequency of technology change	New learning required	M
-					
Gathering and	М	М	Difficulty of information gathering	Amount of information Number and variety of sources	M M
Analyzing				Resourcefulness needed	M
Information			Complexity of analysis	Complexity of information and analysis	14
			Complexity of analysis	Complexity of information and analysis  Need to evaluate source information	M
				Lack of analysis guidelines	M

#### ACADEMIC AND EMPLOYABILITY SKILLS

Skill	Oversit de liet	od o	ct.igo <sup>ts</sup> Complexity Dimension	Complexity Subdimension	ond state of the M
Analyzing and Solving	М	М	Problem complexity	Problem uniqueness or difficulty Number and range of problems	M M
Problems			Solution complexity	Number and complexity of possible solutions	М
Making Decisions and	М	L	Degree of judgment or inference required	Lack of guidance or precedents Integration difficulty Quantity or ambiguity of risks and consequences	M M M
Judgments			Individual decision-making responsibility	Accountability and autonomy Absence or ambiguity of rules or policy constraints	M L
Organizing and Planning	L	М	Complexity of plans	Goal complexity or ambiguity Flexibility required Resource coordination required Scope and effects of planning	L L M M
			Constraints on planning	Lack of guidelines Lack of feedback Constraints on resource availability	L M M
Using Social Skills	М	М	Complexity of social interactions	Diversity Structure or protocol required Tact and sensitivity required	M M M
Adaptability	L	L	Degree of adaptability required  Difficulty of adapting	Frequency of change Unpredictability of change Lack of support for change	M M L
Working in Teams	L	М	Degree of collaboration required  Team member heterogeneity  Goal or role ambiguity	Task interdependence  Team diversity  Lack of clarity or support for team goals Lack of clarity or stability of responsibilities	M M L
Leading Others	L	М	Work challenges People challenges	Challenges to goal attainment Work structuring requirements Scope and complexity of leadership responsibility  Coaching or monitoring needs Conflict management needs	L M NA NA
Building Consensus	L	L	Consensus process inhibitors	Number and diversity of stakeholders Ambiguity of goals Lack of organizational support, incentives, or consensus leadership High consensus standard	L L M
			Difficulty of issues requiring consensus	Complexity of issues Contentiousness of issues Lack of opportunities for agreement	L M M
Self and Career	NA	L	Need for learning and development	Self and career development requirements	NA NA
Develop- ment			Limitations on learning and development opportunities	Time, resource, or support constraints Application constraints	NA NA

Overall complexity ratings: The overall level of complexity required in a skill in order to perform the critical work function. Scale: H=high complexity; M=moderate complexity; and L=low complexity. Two separate ratings are provided: one for workers (entry-level up to first-line supervisors) and the other for supervisors (first-line supervisors). In some cases, the overall complexity rating was NA (Non-Applicable). This means that this skill was deemed not to be needed to perform this given critical work function, so no complexity rating was assigned.

Complexity Subdimension ratings: These are complexity level ratings for individual aspects of the particular skill. Scale: H=high complexity; M=moderate complexity; and L=low complexity. At this time, these ratings are provided for workers only. In some cases, the subdimension complexity rating was NA (Non-Applicable). This means that this particular dimension of the skill was deemed not to be needed to perform this given critical work function, so no complexity rating was assigned.

Describes what a worker needs to know or be able to do to perform the critical work function

### OCCUPATIONAL AND TECHNICAL KNOWLEDGE AND SKILLS

These are the technical knowledge and skills needed to perform the critical work function.

Specific Knowledge and Skills	Specific Knowledge and Skills
A. Knowledge of how to locate and use Material Safety Data Sheets (MSDS).	G. Knowledge of clean-up procedures for spills.
	H. Knowledge of Lock Out/Tag Out requirements.
	I. Knowledge of how to inspect work area and report possible safety risks.
	J. Knowledge of machine functions to determine if all safeguards are opera
	tional.
	K. Knowledge of safety procedures in case of smoke or chemical inhalation.
F. Knowledge of various emergency alarms and procedures.	L. Knowledge of procedures for handling hazardous materials.
A. Skill in identifying and reporting unsafe conditions.	D. Skill in determining if all safety guards are in place prior to machine oper
B. Knowledge of safety issues related to hazardous materials.	tion.
C. Knowledge of housekeeping needed to maintain a safe work environment.	E. Knowledge of clothing and personal protective equipment (PPE) that should be worn to ensure safety.
A. Knowledge of basic filing procedures to properly store inspection	D. Knowledge of company safety standards for handling potential hazards.
records.	E. Knowledge of how to safely store, identify, and use hazardous materials
B. Knowledge of safety requirements and environmental regulations related	and pressurized vessels.
	F. Knowledge of OSHA and other health and safety requirements as applied
	to the workplace.
train employees about hazardous conditions.	to the nonspiace.
A. Knowledge of what constitutes an unsafe condition to be able to take	C. Knowledge of accident documentation procedures.
corrective actions.	
B. Knowledge of required corrective action procedures.	
A. Skill in developing and/or delivering safety training per guidelines.	B. Knowledge of health and safety education requirements.
	A. Knowledge of how to locate and use Material Safety Data Sheets (MSDS). B. Knowledge of company first aid or first response procedures. C. Knowledge of material handling techniques to safely move materials. D. Knowledge of how to be proactive in responding to a safety concern and document occurrences. E. Knowledge of emergency exits. F. Knowledge of various emergency alarms and procedures.  A. Skill in identifying and reporting unsafe conditions. B. Knowledge of safety issues related to hazardous materials. C. Knowledge of housekeeping needed to maintain a safe work environment.  A. Knowledge of basic filing procedures to properly store inspection records. B. Knowledge of safety requirements and environmental regulations related to performing inspections. C. Knowledge of policies and procedures needed to perform audits and train employees about hazardous conditions.  A. Knowledge of what constitutes an unsafe condition to be able to take corrective actions. B. Knowledge of required corrective action procedures.

	Critical Work	Function: Maintain a safe and productive work area
Knowledge/skill	Mean Importance	Examples
		Input all safety and health training into data base to guarantee proper documentation
Using Information and		Use computerized data collection to identify accident trends/areas that need to be evaluated for correction and
Communication Technology		elimination
		Use computers to access training programs
		Use PowerPoint presentations to conduct safety orientations
		Use computer to track safety training
Gathering and Analyzing Information	3 13	Gather, analyze and compare present safety conditions to past
	0.10	Visually inspect work area for possible safety hazards
		Violatily inopeat work area for possible safety flazards
		Collect information on safety audits and accident logs to identify improvement opportunities and corrective actions
		Gather information on who is in need of safety training
		Gather information from injury reports to determine repeated injuries from dangerous equipment in order to make
		corrections
Analyzing and Solving Problems		Identify safety issues to recommend corrective actions
		Select proper personnel protective equipment for the job to prevent injuries
		Analyze safety inspection reports to help implement a corrective action plan
		Identify areas or tasks where most injuries occur to suggest modifications to process, layout or job rotations in order
		to eliminate injuries
Making Decisions and Judgments	3.65	Decide on the list of priorities necessary for training of personnel in emergency response situations
making beolesens and badgmente		Determine that all safety equipment and guards are in place
		Identify unsafe conditions
		Determine if team members have the training and physical capabilities to safely complete assigned task
		Determine the frequency of safety training and drills
	0.47	
Organizing and Planning		Organize safety drills to ensure worker safety
		Plan and organize safety and environmental inspections in order to prevent accidents
		Plan the appropriate timing of emergency drills
		Plan emergency drills to prepare for threats to health or safety
		Communicate to the production supervisor that a safety issues exists and critical process must be stopped until a
Using Social Skills		remedy is found
<b>J</b>		Interact with peers to share info on emergency drills/procedures
		Interact with new employees on importance of safe work environment in order to make a positive impact
		Give feedback to a co-worker in order to communicate a safer way to perform an operation or task
Adaptability	3.13	Change method of production to achieve safer outcomes

	Change to a new safety procedure in order to comply with new safety law requirements	
	Change the production process to temporarily work around an unsafe area or condition	
	Be able to respond to different types of emergencies	
	,	
Working in Teams	3.58 Work with co-workers to identify and report unsafe conditions	
	Work with all team members to conduct effective fire/safety/emergency drills	
	Meet and discuss conditions that are thought to be unsafe in order to make everyone aware	
		_
Leading Others	3.55 Correct potential safety issues when discovered, to make co-workers aware of how issues should be address	ed
	Encourage a more participative approach to safety issues	
	Lead by example to show no repercussion of notification of possible unsafe conditions	
	Lead others to work safely by emphasizing safe practices	
	Build a common theme of "safety-first" among workers to ensure a safe work environment	
Building Consensus	3.00 Explain how to correct an unsafe condition without offending the affected workers	
Building Consensus	Review potential or existing safety concerns and build consensus by discussing potential actions needed to re	oo olyo
		escive
	them	
	Facilitate agreement on safety procedures in order to assure entire team follows the agreed-upon process	
	Create consensus upon emergency procedures and specific people's responsibilities	
	Build consensus on what level of safety training is needed	
Self and Career Development	2.93 Learn about hazardous material specs to prevent injury	
Sell and Career Development	Attend in-house operator safety seminars	
	Identify learning opportunities in environmental laws and technology to improve safety	
	Acquire CPR and first-aid training	
Speaking	3.48 Present safety policies and procedures to other employees in order to understand the importance of safety	
ореакту	Express concerns to management about unsafe work environment	
	Present accurate and cogent presentations to new hires and trainees in safety subjects	
	Present safety training to co-workers when new work processes are implemented	
	Discuss environmental issues with supervisor in order to avoid accidents and unsafe conditions	
	Discuss environmental issues with supervisor in order to avoid accidents and unsale conditions	
Listening	3.44 Listen to descriptions of safety policies and procedures in order to avoid accidents	
<u> </u>	Listen to the concerns of the employee in order to identify ergonomics improvements needed	
	Receive feedback from employees as it pertains to safety in a respectful and attentive way	
Writing	Receive feedback from employees as it pertains to safety in a respectful and attentive way	
Writing	Receive feedback from employees as it pertains to safety in a respectful and attentive way  Listen to employees identifying potential safety hazards and take corrective actions	

	Document equipment safety checks in safety log book
	Document safety incident and training orientation
	Document corrective actions regarding safety
Reading	3.63 Read warning labels to identify potentially hazardous materials
	Read information on emergency procedures
	Read MSDS forms to protect self and others
	Read company safety policies and procedures
	Read machinery and product instructions in order to safely use them
	Read safety and environmental standards to perform inspections
Math	2.31 Tabulate safety incidents
	Calculate the safe volumes of contamination
	Measure the distances needed to maintain safe tolerances in the workplace
	Measure content of lead in painted surfaces
	Calculate production quantities against accident rates to ensure that demand doesn't create unsafe workplace
Science	3.21 Understanding of how the body is impacted by ergonomics in order to make workstation more comfortable and safe
	Understanding of potential chemical hazards
	Knowledge of basic electrical systems to prevent electrocution

#### HSE9

## Critical Work Function: Ensure safe use of equipment in the workplace.

#### Critical work functions

describe the major responsibilities involved in carrying out a concentration

#### **Key Activities**

#### Key activities are the duties and tasks involved in carrying out a critical work function

#### **Performance Indicators**

**Performance indicators** correlate to the key activities. The performance indicators provide information on how to determine when someone is performing each key activity competently

# Train others to use equipment safely

New operators are given a complete orientation to the equipment.

All important information regarding equipment safety is communicated clearly and effectively.

Maintenance workers obtain certification to train others in technical skills and knowledge, where applicable.

Suggestions regarding training materials and content are made to correct parties.

Evaluations and feedback are utilized to improve training materials and methods.

During training, trainee has the correct tools to do the job.

 $Post-training\ evaluation\ indicates\ that\ workers\ can\ operate\ equipment\ safely.$ 

Training and facilitation techniques used are appropriate for the audience.

Quality and effectiveness of training are documented appropriately.

#### **Concentrations**

are the major areas of frontline work covering families of related jobs. Separate standards were identified for each concentration. Suggest process and procedures that support safety and effectiveness of work environment Health and safety representatives are consulted in the development of suggestions.

Operator feedback is solicited and used in suggestions on how to create a safer, more effective work environment.

Suggestions are made to correct parties, according to company procedure.

Suggestions are properly documented.

Content of suggestions appropriately responds to safety, quality and productivity issues.

#### Fulfill safety and health requirements for maintenance, installation and repair

Communication regarding safety is made regularly to all employees.

Job safety analyses are reviewed regularly according to company policy.

Hazardous materials procedures and policies, such as Material Safety Data Sheet and "right to know" are accurately followed.

Environmental testing of workplace is performed on a regular basis as required by company policy or regulation.

Equipment is audited to ensure there are no by-passes of safety guards.

All regulatory and company safety procedures are followed including lock-out & tag-out, confined space and ergonomics.

Good housekeeping procedures are followed.

Safety and personal protective equipment is available, performs correctly, and has current certification.

# Monitor equipment and operator performance

Monitoring is performed regularly.

Out-of-compliance or unsafe conditions are reported immediately.

Corrective action is taken on out-of-compliance or unsafe conditions.

Equipment is checked to ensure it is operating according to specifications.

Tools are checked to ensure they are in compliance with specifications.

Accident and injury data is forwarded to appropriate personnel for inclusion in OSHA recordables.

Information on the equipment use is gathered from operators to reveal existing or potential problems.

Equipment and process are adjusted correctly.

All monitoring data is accurately documented.

Describes what a worker needs to know or be able to do to perform the critical work function

### ACADEMIC AND EMPLOYABILITY SKILLS

Skill	Overoll derich	ot oreign ext	Complexity Dimension	Complexity Subdimension	Constitution NA
Math	NA	L	Complexity of mathematics content	Number sense and computation Geometry, measurement, and spatial sense Complexity of data analysis, statistics, and probability Functions and algebraic thinking Complexity of representation and communication	NA NA NA NA
			Complexity of problem solving	Mathematical methods Mathematical reasoning Mathematical tools	NA NA NA
Science	L	L	Complexity of scientific inquiry	Design Use of evidence	L L
			Complexity of understanding the nature of science	Unifying concepts and processes	L
			Complexity of core scientific content	Physical science Life science Earth and space science	L NA NA
			Complexity of applied science	Science and technology Science in personal and social perspective	L L
Reading	М	М	Complexity of text		М
			Complexity of reading skills		M
			Complexity of reading purpose		M
Writing	M	М	Complexity of text	Complexity of text	М
			Complexity of writing product	Type of product	М
				Organization Elaboration	M M
			6 1 1 6 11		
			Complexity of writing process	Writing development To inform	L M
				To persuade	M
Listening	М	М	Complexity of communication	Content complexity	М
				Demands on attention	M
				Communication indirectness	М
			Barriers to communication	Limitations on interaction	М
				Distractions	М
Speaking	M	М	Complexity of communication	Content complexity	м
				Tact and sensitivity required	M
				Communication indirectness	L
			Context demands	Diversity of audience	М
				Constraints on preparation Distractions	M M
				Listener resistance	M
Using	L	L	Complexity of technology application	Complexity of equipment or technology	М
Information		<b>L</b>	, , , , , , , , , , , , , , , , , , , ,	Complexity of applications	L
and Com-				Training time constraints	L
munications Technology			Frequency of technology change	New learning required	М
Gathering	М	М	Difficulty of information gathering	Amount of information	М
and			, , , , , , , , , , , , , , , , , , , ,	Number and variety of sources	M
Analyzing Information				Resourcefulness needed	М
OI III a LI OII			Complexity of analysis	Complexity of information and analysis	М
				Need to evaluate source information	L
				Lack of analysis guidelines	L

#### ACADEMIC AND EMPLOYABILITY SKILLS

Skill	Overall deficit	ode ode of the constitution of the constitutio	cd iso <sup>ct</sup> Complexity Dimension	Complexity Subdimension	Charlet Hotels  One of the state of the stat
Analyzing and Solving			Problem complexity	Problem uniqueness or difficulty Number and range of problems	M M
Problems			Solution complexity	Number and complexity of possible solutions	М
Making Decisions and Judgments	М	М	Degree of judgment or inference required	Lack of guidance or precedents Integration difficulty Quantity or ambiguity of risks and consequences	L M M
judgments			Individual decision-making responsibility	Accountability and autonomy Absence or ambiguity of rules or policy constraints	M L
Organizing and Planning	М	М	Complexity of plans	Goal complexity or ambiguity Flexibility required Resource coordination required Scope and effects of planning	L M M M
			Constraints on planning	Lack of guidelines Lack of feedback Constraints on resource availability	L L M
Using Social Skills	М	М	Complexity of social interactions	Diversity Structure or protocol required Tact and sensitivity required	M M M
Adaptability	М	L	Degree of adaptability required  Difficulty of adapting	Frequency of change Unpredictability of change Lack of support for change	M M M
Working in Teams	М	М	Degree of collaboration required  Team member heterogeneity	Task interdependence Team diversity	M M
			Goal or role ambiguity	Lack of clarity or support for team goals Lack of clarity or stability of responsibilities	L L
Leading Others	М	М	Work challenges People challenges	Challenges to goal attainment Work structuring requirements Scope and complexity of leadership responsibility  Coaching or monitoring needs	M M M
Building Consensus	М	М	Consensus process inhibitors	Conflict management needs  Number and diversity of stakeholders  Ambiguity of goals  Lack of organizational support, incentives, or consensus leadership  High consensus standard	M L M
			Difficulty of issues requiring consensus	Complexity of issues Contentiousness of issues Lack of opportunities for agreement	M M M
Self and Career	М	L	Need for learning and development	Self and career development requirements	М
Develop- ment			Limitations on learning and development opportunities	Time, resource, or support constraints Application constraints	L L

Overall complexity ratings: The overall level of complexity required in a skill in order to perform the critical work function. Scale: H=high complexity; M=moderate complexity; and L=low complexity. Two separate ratings are provided: one for workers (entry-level up to first-line supervisors) and the other for supervisors (first-line supervisors). In some cases, the overall complexity rating was NA (Non-Applicable). This means that this skill was deemed not to be needed to perform this given critical work function, so no complexity rating was assigned.

Complexity Subdimension ratings: These are complexity level ratings for individual aspects of the particular skill. Scale: H=high complexity; M=moderate complexity; and L=low complexity. At this time, these ratings are provided for workers only. In some cases, the subdimension complexity rating was NA (Non-Applicable). This means that this particular dimension of the skill was deemed not to be needed to perform this given critical work function, so no complexity rating was assigned.

Describes what a worker needs to know or be able to do to perform the critical work function

#### OCCUPATIONAL AND TECHNICAL KNOWLEDGE AND SKILLS

These are the technical knowledge and skills needed to perform the critical work function.

Specific Knowledge and Skills	Specific Knowledge and Skills	
A. Knowledge of government policies, procedures, and regulations governing the safe use of equipment.	E. Knowledge of government policies, procedures, and regulations governing the safe use of equipment.	
	F. Knowledge of procedures to prevent or reduce emissions and spills.	
	G. Knowledge of Hazardous Materials (HAZMAT) procedures information.	
D. Knowledge of Material Safety Data Sheets (MSDS).	H. Knowledge of Material Safety Data Sheets (MSDS).	
A. Knowledge of equipment operation and design parameters to determine if machine is operating safely.	C. Skill in making adjustments to equipment to ensure that is operating within established parameters.	
B. Skill in reviewing environmental data systems in the factory.	D. Skill in regularly monitoring equipment for unsafe conditions.	
A. Knowledge in identifying safety training courses B. Knowledge of equipment manual and standard practice manual to repair	E. Skill in training other workers in proper safety procedures during maintenance process.	
C. Knowledge of certifications needed for regulatory compliance (i.e.,	F. Knowledge of the tools and materials needed to operate equipment to train others.	
Pathogens).	G.Skill in using monthly safety meetings to improve the safety environment and communicate changes in regulations.	
D. Skill in conducting equipment sarety demonstrations.		
A. Skill in developing safety checklists.	H. Knowledge of company safety policies (e.g., Lock out/Tag out).	
properly.	<ol> <li>Knowledge of proper and safe installation techniques as described in man uals, checklists, and regulations.</li> </ol>	
	J. Skill in recognizing and proposing ways to improve safety practices to pro	
	pose alternative practices.  K. Knowledge of Material Safety Data Sheets	
	L. Knowledge of Hazardous Materials (HAZMAT) policies and procedures.	
	M.Skill at modifying machines as prescribed to prevent injuries and improve	
	ergonomics.	
and monitor performance.	N.Skill in generating and sharing near miss reports.	
	<ul> <li>A. Knowledge of government policies, procedures, and regulations governing the safe use of equipment.</li> <li>B. Knowledge of procedures to prevent or reduce emissions and spills.</li> <li>C. Knowledge of Hazardous Materials (HAZMAT) procedures information.</li> <li>D. Knowledge of Material Safety Data Sheets (MSDS).</li> <li>A. Knowledge of equipment operation and design parameters to determine if machine is operating safely.</li> <li>B. Skill in reviewing environmental data systems in the factory.</li> <li>A. Knowledge in identifying safety training courses</li> <li>B. Knowledge of equipment manual and standard practice manual to repair equipment safely.</li> <li>C. Knowledge of certifications needed for regulatory compliance (i.e., Cardio Pulmonary Resuscitation (CPR), Fire extinguisher, and Blood born Pathogens).</li> <li>D. Skill in conducting equipment safety demonstrations.</li> <li>A. Skill in developing safety checklists.</li> <li>B. Knowledge of equipment safety systems to verify that they are operating properly.</li> <li>C. Knowledge to how prevent unsafe shutdown of equipment.</li> <li>D. Knowledge of personal protective equipment that should be worn.</li> <li>E. Skill in performing leak checks to determine if toxic or hazardous material is escaping from a piece of equipment.</li> <li>F. Skill in evaluating workplace safety using safety audit processes.</li> <li>G. Knowledge of hazard to document and communicate corrective actions</li> </ul>	

	Critical Work Fu	unction: Ensure safe use of equipment in the workplace
Knowledge/skill	Mean Importance	Examples
		Prepare and deliver PowerPoint presentations
Using Information and		Email concerned individuals about safety needs or conditions
Communication Technology		Use computer to document and monitor performance training
		Use technology to research safety practices and guidelines
		Use computer and other telecomm equipment to communicate safety information
		Use document database to view documents for tool operation and qualification
		Determine the topics of training (by reading maintenance manuals, participating in vendor training, and reviewing
<b>Gathering and Analyzing Information</b>	4.15	OSHA standards) to assess training needs
		Orient new operators in the proper use of equipment and suggest process improvements
		Review safety requirements for a piece of equipment and integrate the requirements into the production procedures
		Organize information to meet safety requirements; put safety information at a central location for all maintenance
		persons involved
		Gather and track safety metrics so that the workforce can be educated on how better they may utilize equipment
		safety
Analyzing and Solving Problems	3.62	Anticipate, identify and provide responsive preventive training for safe use of equipment
		Identify safety problems of aging equipment and replace or bring up to date
		Evaluate operator suggestion and ideas for safe improvements
		Analyze processes to ensure safety standards have been met
Making Decisions and Judgments	4.08	Determine if equipment is being operated within appropriate safety standards
		Make a judgment about improving processes to reduce or eliminate safety injuries
		Determine best safety practices, policies and procedures for equipment
		Judge effectiveness/content of safety; Determine adequacy of safety plan for maintenance
		Check to see if job is safe; if it is not safe, make necessary changes and document why changes were made
Organizing and Planning	3.65	Plan safety-related training for equipment based on operator, maintenance, installer experience
		Organize time to ensure that safety operations are performed when needed
		Plan down time so as to minimize it
		Plan the safety items and tasks needed in preventive maintenance or maintenance
		Develop plan to train all people who use equipment on safety procedures and practices
Using Social Skills	3 81	Interact with the user in positive manner to assure that proper safety methods are followed
comg coolai olimo		Make suggestions or provide training in a courteous way
		Communicate with operators regarding proper operations; also solicit feedback regarding machine operation
		Train others to use equipment safely; Suggest improvements and interact with operators
		Train salote to acc equipment dulery, duggest improvements and interact with operators

	Use social skills to sell the positives of good safety practices
Adaptability	3.46 Shut down out of compliant equipment to assure unsafe practices or out of compliance does not occur
	Change the training method to ensure safe equipment operation
	Demonstrate openness to new safety procedures
	Understand differences in learning styles and modify methods accordingly
	Be adaptable to msd's and OSHA standard changes
Working in Teams	3.92 Team operators with safety personnel to eliminate or reduce the impact of workplace hazards
<b>3</b>	Have teams write procedures on safe use of equipment in the workplace
	Work with team to identify root cause and implement corrective measures
	Gather information from team members and identify corrective/ preventive action
	Share knowledge and experience with team members to increase the knowledge of entire team
	g
Leading Others	4.00 Practice safety in all areas, leading others by example
	Perform on the spot corrections of unsafe practices and procedures
	Influence others by following safety procedures, making suggestions for improvements and doing a good job
	Influence employees to attend equipment safety training
	Give proper training and coaching on how to safely use equipment
Building Consensus	3.69 Facilitate safety training classes by combining operations and maintenance personnel
Building Consensus	Provide examples of acceptable work practices and discuss the features and benefits of each
	Build consensus among all maintenance employees to ensure proper safety guidelines are followed
	Dulid consensus among all maintenance employees to ensure proper sarety guidelines are followed
	Pass on info about unsafe conditions, equipment or operations to appropriate organizations (internal) for resolution
Self and Career Development	3.88 Identify opportunities in safety such as safety rep positions
	Attend OSHA and operator-related training
	Constantly monitor changes in safety practices
	Know what is required for safety compliance and what is really needed to keep employees safe, to reduce cost and
	injury
	Attend safety and OSHA training on equipment; Improve safe working conditions
Speaking	4.13 Talk to new employees about dangers of work place
	Give presentation on proper use and safety of tools and equipment to co-workers
	Explain to new operators the location and function of safety devices on the equipment they are using
	Train others to use equipment safely; Report issues and problems effectively
	Train outside to dod oquipmont outsig, hopote loodoo and problemo onconvery
Listening	4.29 Listen to feedback from machine operators once a safety procedure is introduced
<u> </u>	Listen to verbal communication of safety and OSHA regulations from supervisors (e.g., accidents, loss time, workers
	comp)

	Listen to and evaluate operator feedback for use in better safety procedures
Writing	3.88 Create detailed near miss reports to educate co-workers about unsafe situations and corrective measures
	Create detailed safety operating procedures for equipment maintenance
	Document how a piece of equipment complies with regulations
	Write safety rules, safe procedures and practices, etc.
	Develop a written lock-out tag-out program so everyone knows what is going to take place
Reading	4.56 Read and understand equipment maintenance safety procedures before operating equipment
	Read equipment operation and service documents
	Review the material safety data sheets for a new piece of equipment
	Read documentation on personal protective equipment needed when working on a tool
	Read training materials, safety rules, equipment operating procedures
Math	3.60 Compute calculations to determine environmental impact
	Compare and contrast man hours of safe to unsafe practices (ROI, CBA)
	Apply statistical analysis to preventative maintenance operations
	Estimate performance of equipment after repairs are completed
	Perform necessary calculations to ensure tools comply with specs
Science	3.85 Explain HAZMAT requirements for equipment maintenance procedures (MSDS, PPE, OSHA)
	Apply knowledge of physics, chemistry to safety activities in the workplace
	Apply principles of physics to identify reduction in ergonomic injuries
	Identify which chemicals are in the facility by material safety data sheets
	Apply environmental/safety and hazards standards in equipment operations

#### HSE<sub>10</sub>

## Critical Work Function: Plan for safety in new production processes.

#### Critical work functions

describe the major responsibilities involved in carrying out a concentration

**Concentrations** are the major areas of frontline work covering families of related jobs. Separate stan-

dards were iden-

tified for each concentration.

#### Key activities are **Performance Indicators** the duties and tasks

**Performance indicators** correlate to the key activities. The performance indicators provide information on how to determine when someone is performing each key activity competently

Hazards and problems are correctly identified. Report hazards and problems.

Hazards and problems are properly documented.

Hazard and problem reporting is done according to policy and procedure. Problems, hazards, and alerts are communicated promptly to appropriate parties. Incident and accident reports are complete, accurate and available to relevant parties.

Ensure adherence to policies and procedures.

**Key Activities** 

involved in carrying

out a critical work

function

Employees are properly trained in all safety procedures.

Enforcement is performed consistently according to the company policies and procedures.

Safety policies are clear.

Safety policies are properly posted.

Safety violation reports and forms are filed in a timely way. Follow-up occurs on safety violation reports and forms.

Enforcement action documentation is complete, clear, conforming to regulatory requirements.

Take corrective action regarding safety policies and procedures.

Corrective actions regarding safety are correct and complete.

Corrective actions are clearly and appropriately communicated to others when necessary. Corrective actions are taken immediately upon discovery of safety hazard or problem. Follow up occurs after corrective action takes place to ensure safe behavior is being exhibited.

Document hazards and problems.

Documentation meets all regulations.

Documentation is clear, accurate and legible.

Documentation is filed and accessible by relevant parties.

Documentation is completed and updated in a timely way.

Implement safety programs.

New equipment conforms to safe manufacturing practices.

Lock out/Tag out procedures are properly used.

Product handling is evaluated for physical safety concerns.

Product design includes safety features.

**About the Work** 

Describes what a worker needs to know or be able to do to perform the critical work function

### ACADEMIC AND EMPLOYABILITY SKILLS

Skill	overall destroy	otes oreginative	Complexity Dimension	Complexity Subdimension	orizi di kate
Math	L	L	Complexity of mathematics content	Number sense and computation Geometry, measurement, and spatial sense Complexity of data analysis, statistics, and probability Functions and algebraic thinking Complexity of representation and communication	L L M L
			Complexity of problem solving	Mathematical methods Mathematical reasoning Mathematical tools	L L M
Science	L	L	Complexity of scientific inquiry	Design Use of evidence	L M
			Complexity of understanding the nature of science	Unifying concepts and processes	L
			Complexity of core scientific content	Physical science Life science Earth and space science	L L NA
			Complexity of applied science	Science and technology Science in personal and social perspective	M M
Reading	М	М	Complexity of text Complexity of reading skills Complexity of reading purpose		M M M
Writing	М	M M	Complexity of text	Complexity of text	М
			Complexity of writing product	Type of product Organization Elaboration	M M M
			Complexity of writing process	Writing development To inform To persuade	M M M
Listening	М	М	Complexity of communication	Content complexity Demands on attention	M M
			Barriers to communication	Communication indirectness  Limitations on interaction Distractions	M M M
Speaking M	М	Complexity of communication	Content complexity Tact and sensitivity required Communication indirectness	M M L	
			Context demands	Diversity of audience Constraints on preparation Distractions Listener resistance	M M M
Using Information and Com-	L	L	Complexity of technology application	Complexity of equipment or technology Complexity of applications Training time constraints	M L L
munications Technology			Frequency of technology change	New learning required	М
Gathering and Analyzing	М	М	Difficulty of information gathering	Amount of information Number and variety of sources Resourcefulness needed	M M M
Information			Complexity of analysis	Complexity of information and analysis  Need to evaluate source information  Lack of analysis guidelines	M M M

#### ACADEMIC AND EMPLOYABILITY SKILLS

Skill	Overoli de ita	otes oversille stry	complexity Dimension	Complexity Subdimension	Charles for the Control of the Contr
Analyzing and Solving	ving	М	Problem complexity	Problem uniqueness or difficulty Number and range of problems	M M
Problems			Solution complexity	Number and complexity of possible solutions	М
Making Decisions and	М	М	Degree of judgment or inference required	Lack of guidance or precedents Integration difficulty Quantity or ambiguity of risks and consequences	M M M
Judgments			Individual decision-making responsibility	Accountability and autonomy Absence or ambiguity of rules or policy constraints	M L
Organizing and Planning	М	М	Complexity of plans	Goal complexity or ambiguity Flexibility required Resource coordination required Scope and effects of planning	M M M
			Constraints on planning	Lack of guidelines Lack of feedback Constraints on resource availability	M M M
Using Social Skills	М	М	Complexity of social interactions	Diversity Structure or protocol required Tact and sensitivity required	M M M
Adaptability	М	М	Degree of adaptability required  Difficulty of adapting	Frequency of change Unpredictability of change Lack of support for change	м м м
Working in Teams	М	М	Degree of collaboration required  Team member heterogeneity  Goal or role ambiguity	Task interdependence  Team diversity  Lack of clarity or support for team goals	м м м
Leading Others	М	M	Work challenges  People challenges	Lack of clarity or stability of responsibilities  Challenges to goal attainment Work structuring requirements Scope and complexity of leadership responsibility  Coaching or monitoring needs	M M M
Building Consensus	L	M	Consensus process inhibitors	Number and diversity of stakeholders Ambiguity of goals Lack of organizational support, incentives, or consensus leadership High consensus standard	M M L
			Difficulty of issues requiring consensus	Complexity of issues Contentiousness of issues Lack of opportunities for agreement	M M M
Self and Career Develop- ment	NA	М	Need for learning and development  Limitations on learning and development opportunities	Self and career development requirements  Time, resource, or support constraints Application constraints	NA NA NA
incit			opportunities	Application constraints	IVA

Overall complexity ratings: The *overall* level of complexity required in a skill in order to perform the critical work function. *Scale*: H=high complexity: M=moderate complexity; and L=low complexity. Two separate ratings are provided: one for *workers* (entry-level up to first-line supervisors) and the other for supervisors (first-line supervisors). In some cases, the overall complexity rating was NA (Non-Applicable). This means that this skill was deemed not to be needed to perform this given critical work function, so no complexity rating was assigned.

Complexity Subdimension ratings: These are complexity level ratings for individual aspects of the particular skill. *Scale*: H=high complexity: M=moderate complexity; and L=low complexity. At this time, these ratings are provided for workers only. In some cases, the subdimension complexity rating was NA (Non-Applicable). This means that this *particular dimension* of the skill was deemed not to be needed to perform this given critical work function, so no complexity rating was assigned.

Describes what a worker needs to know or be able to do to perform the critical work function

#### OCCUPATIONAL AND TECHNICAL KNOWLEDGE AND SKILLS

These are the technical knowledge and skills needed to perform the critical work function.

Skill Category	Specific Knowledge and Skills	Specific Knowledge and Skills		
Safety Procedures	A. Knowledge of policies governing corrective actions for safety hazards and violations.	G. Knowledge of process mechanics to assess possible safety hazards. H. Knowledge of physical limitations and restraints for material handlers.		
	B. Knowledge of proper use of Material Safety Data Sheets (MSDS) information in handling and dealing with hazardous materials.	Knowledge of procedures for filing safety related documentation and incident reports.		
	<ul> <li>C. Knowledge of Lock out/Tag out procedures for service, repair and maintenance of equipment.</li> </ul>	J. Knowledge of alert systems and shut down procedures and how to activate them.		
	D. Knowledge of safety equipment (i.e., fire extinguisher and first aid kit).	K. Knowledge of Personal Protective Equipment (PPE) requirements.		
	<ul> <li>E. Knowledge of the effects of production by products that may cause health hazards.</li> </ul>	L. Knowledge of the location of required safety information, such as safety response manuals.		
	F. Knowledge of safety policies in order to clearly communicate those policies to workers.	M.Skill in interpreting safety policies so they are correctly applied in operation of machinery and handling of hazardous materials.		
Business	A. Knowledge of company procedures to prevent workplace accidents.	D. Knowledge of procedures used to ensure that safety violations are proper-		
Policies	B. Knowledge of regulations to ensure proper training of employees.	ly corrected.		
and Procedures	C. Skill in checking that necessary corrective action will be taken.	E. Knowledge of enforcement policies to address violations.     F. Knowledge of notification procedures for various emergencies.		
Regulatory Compli- ance	A. Knowledge of laws/regulations, including Occupational Health And Safety Administration (OSHA) and EPA.	B. Knowledge of regulatory procedures to ensure proper reporting. C. Skill in implementing facility safety plans.		
Documen-	A. Skill in assessing documentation so that it is clear and understandable by	C. Skill in documenting the details needed for a safety and health plan associ-		
tation	production workers.  B. Knowledge of posting and filing requirements for Hazardous Materials (HAZMAT) and Material Safety Data Sheets (MSDS).	ated with a new production process.  D. Knowledge of how to fill out an accident report for company records.  E. Knowledge of policies and procedures for documenting hazards and problems		
Corrective Action	A. Ability to use company procedures to take immediate corrective actions in order to minimize damage and/or injury.	C. Knowledge of procedures/process to correctly report and follow up on corrective actions.		
	B. Ability to use root cause analysis, Fishbone and other problem solving techniques to arrive at effective corrective actions.			
Training Procedures	A. Skill in training employees in proper manufacturing procedures.     B. Knowledge of specific Standard Operation Procedures (SOPs) regarding safety, health and environmental issues.	C. Skill in upgrading training procedures to incorporate newly discovered safety and health hazards.		

**About the Worker** 

	Critical V	Vork F	unction: Plan for safety in new production processes
Knowledge/skill Using Information and Communication Technology	Mean Importance	3.73 <u>E</u>	Examples Enter safety violations on PC Search internet for changes to OSHA regulations Photocopy and post safety rules Use email to communicate safety concerns to management
Gathering and Analyzing Informatio	-	<u> </u>	Analyze information from safety inspections and accident reports to help determine corrective actions  Monitor production employees to determine if safety standards are adhered to and to correct violations  Analyze possible safety concerns prior to implementation of new process  Gather information from OSHA logs to analyze safety processes
Analyzing and Solving Problems	- - -	<u>/</u>	Identify hazards on new equipment in order to improve safety  Anticipate safety problems through inspections and drills  Use safety committees to identify and suggest solutions to current and potential problems  Track safety violations to spot trends by manufacturing process or function
Making Decisions and Judgments	- - -	<u>]</u> ]	Determine proper safety procedures for new machinery and operations  Determine how and when safety training should be implemented  Develop safety checklist for employees to use prior to performing operations  Determine whether additional training or discipline is warranted after an incident or problem
Organizing and Planning	- - -	(	Organize proper reporting procedure for safety hazards and accidents to ensure that employees know of the dangers Organize safety programs and training to increase employee awareness Organize workflow to minimize ergonomic injuries Develop and organize emergency drills to practice in case of real emergency
Using Social Skills	-	(	Contact management in a persuasive manner to report safety violations and the need for action  Speak to operators tactfully when describing a safety violation  Communicate safety procedures to a diverse workforce in a respectful manner  Meet with workers in an open manner to discuss safety concerns
Adaptability	-	<u>N</u>	Demonstrate willingness to adopt new safety precautions based on new processes  Modify safety policies when they are not working  Update the policies regarding personal safety equipment when implementing new processes or equipment  Demonstrate receptivity to new ideas from safety team to help with department's safety goals
Working in Teams	-	_	Work collaboratively with safety director to ensure proper reporting and documentation of safety issues

	Collaborate with maintenance and testing departments to ensure logout/tagout procedures are being used Work collaboratively with machine manufacturers to ensure adequate safety controls in equipment prior to equipment being installed on site
Leading Others	Lead co-workers in following safety procedures by following them yourself     Influence workers to develop safe work habits     Encourage co-workers to bring safety concerns forward during team meetings and other times     Motivate interest in safety through coaching and providing positive feedback
Building Consensus	3.31 Resolve safety violations by referring to safety policies and procedures  Create consensus on new procedures that need to be developed  Facilitate agreement on safety inspection criteria in order to complete a new equipment inspection
Self and Career Development	2.71 Identify safety training needs through accident reports and corrective action reports  Attend training on confined space operations  Obtain OSHA certification  Attend training on ergonomics
Speaking	3.97 Present safety training on new process to employees  Verbally instruct workers in safety policies  Conduct weekly safety meetings  Communicate team safety concerns to management
Listening	4.00 Receive feedback on effectiveness of safety policies from operators  Listen to workers who were involved in an accident to determine if policies need to be modified  Listen to safety concerns of employees in order to summarize them for management  Listen to safety warnings on equipment
Writing	4.00 Write accident reports  Keep written documentation of safety training completed by employees  Develop written safety information for workers as a reinforcement to verbal training  Document machine installation safety checks
Reading	4.27 Read company safety procedures to ensure adherence when performing tasks  Read warning labels on chemical solvents  Read safety manuals before operating a new tool  Read MSDS on new materials to determine precautions when handling
Math	3.00 Calculate the number of safety incidents for evaluations  Take and contrast pre-training and post-training measures to determine effectiveness of safety training  Take measurements of health parameters (fumes, dust, noise, etc.)

	Measure location of new equipment to ensure adequate space for exits in case of emergency evacuations		
Science	3.80 Understand the principles of chemistry to properly identify hazards in work environment		
	Knowledge of physics to determine the safe operating capacity of equipment		
	Knowledge of ergonomics to ensure new tooling and fixtures do not cause injuries		